VWell Toolkit
to Begin and Sustain Well-being Programming
For VUMC Leadership

Developed by:

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Executive Summary:

Departmental chairs and leadership across VUMC has been tasked with enhancing current systems and culture to maximize physician well-being. Initiating and managing these changes requires effective change management strategies, equipping of boots-on-the-ground leaders in implementation and effective communication strategies.

We have developed this Toolkit to assist leadership in effectively and successfully initiating these changes. Based on lessons learned and positive outcomes from other institutions, this step-wise blueprint for change can provide a roadmap for how to begin and sustain wellness programing. First, we share a successful change management strategy that adheres to Kotter's principles of effective change management. After defining the domains of interest that are likely to have the most impact on your specific group of physicians, we recommend a step-wise approach to assembling your team of wellness champions. Steps 4 through 6 offer examples of best practices that have not only been successfully implemented but that have also shown to significantly impact physician burnout and engagement. In Step 7 we recommend considering recommendations from the VUMC Task Force for Physician Empowerment and Well-being that address the needs of VUMC physicians as a whole while Step 8 empowers wellness champions to innovate and address the specific needs of their own practice areas.

Eight-Step Approach:

Step 1: Develop an overall change management strategy to impact physician well-being

Step 2: Define the domains of interest

Step 3: Operationalize your team

Step 4: Select the level of intervention(s) desired

Step 5: Equip physician leaders to develop physicians within their departments

Step 6: Consider organizational strategies that have been successful in other institutions

Step 7: Consider the recommendations of the VUMC Physician Wellness Task Force

Step 8: Consider specific interventions that address unique needs in your department

References:

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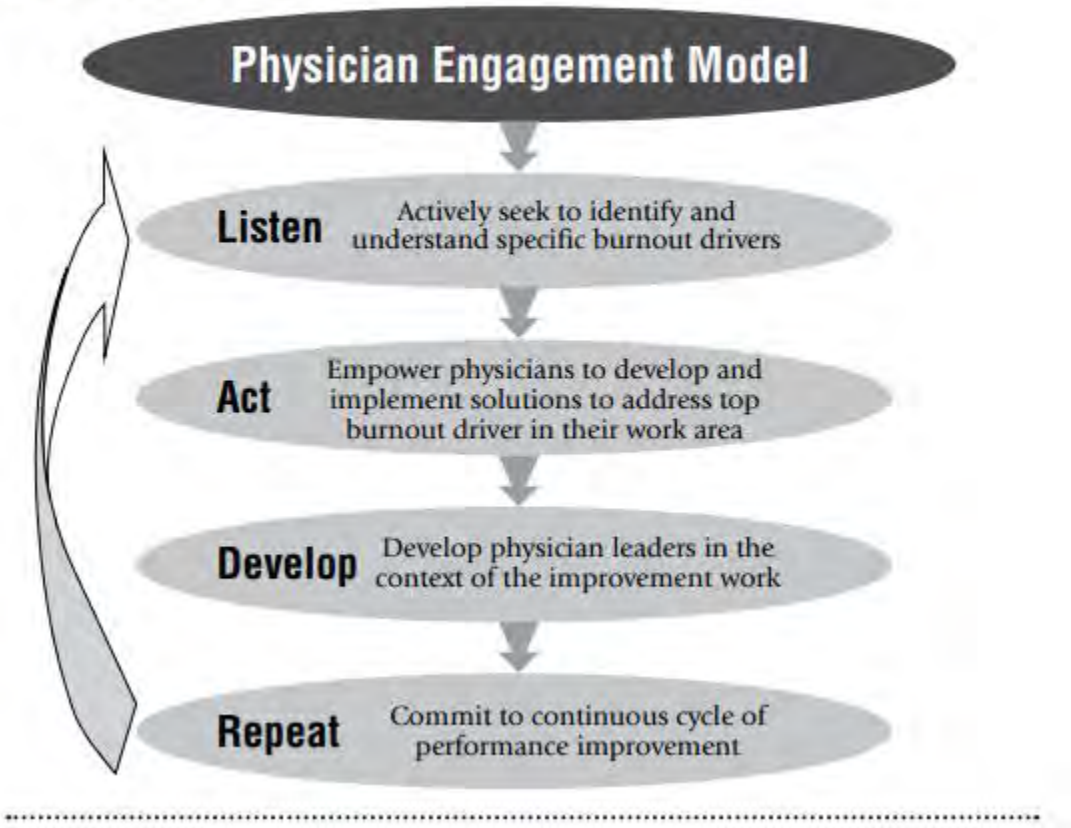
Step 1: Develop an overall change management strategy to impact physician well-being

Listen-Act-Develop Model:

A successful, overarching model and change management system created to reduce burnout and engage physicians in organization's mission

- Listen: convene focus groups to identify drivers of burnout within work units then create a actionable burnout mitigation plan focused on greatest driver
- Act: empower physicians to create a plan to address prioritized driver and provide physician champion with team and resources (including funding for time), monitor results, communicate results
- Develop: select and develop leadership skills of physician leaders esp related to burnout mitigation and leading mitigation improvement teams
- Repeat: commit to a continuous cycle of performance improvement

FIGURE 1
Listen-Act-Develop Model



Physician-Organization Collaboration Reduces Physician Burnout and Promotes Engagement (J Healthcare Mgmt, 2016)

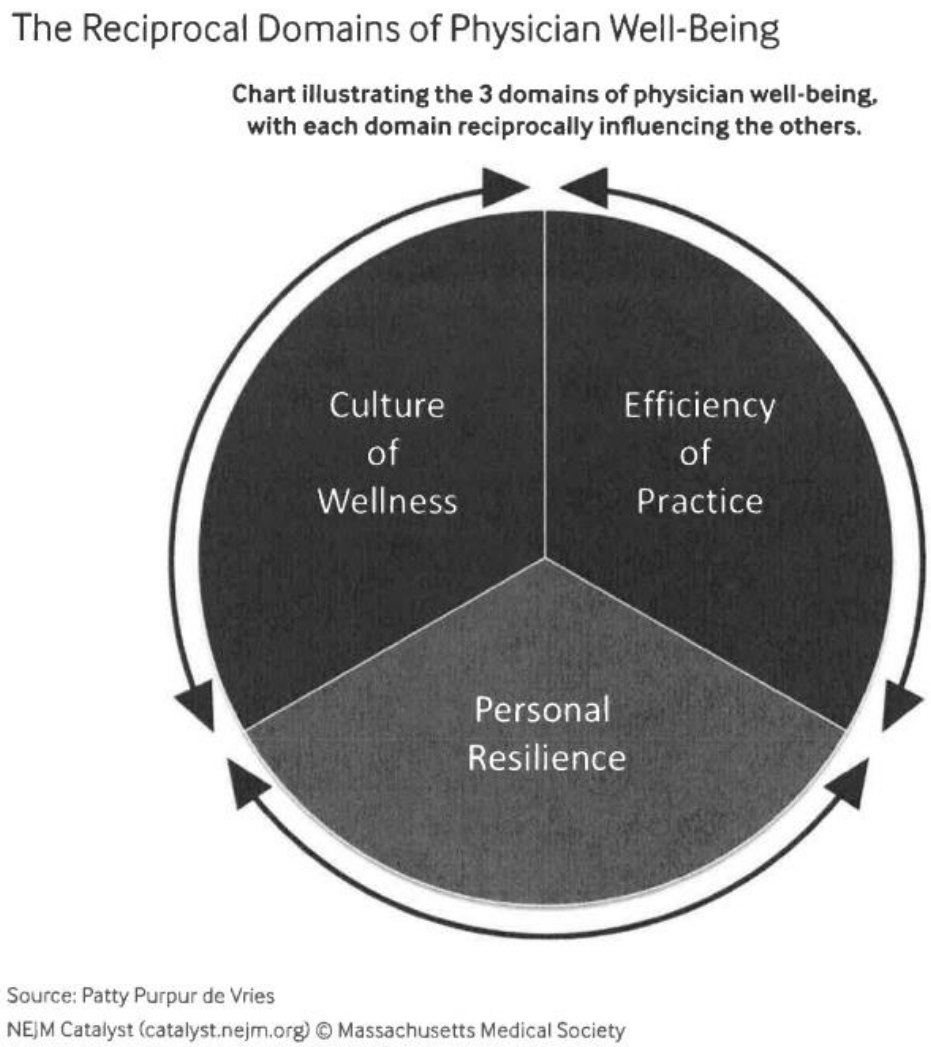
Appendix A

Step 2: Define the domains of interest

A Three-Pronged Approach:

Organizations seeking to improve physician's well-being should incorporate interventions in three domains:

- Improve Practice Efficiency: EMR enhancements & support, adequate staffing, decrease regulatory burdens, facilitate care coordination
- Create a Culture of Wellness: leader selection, promotion of self-care by leadership, create a culture of appreciation
- Promote Physician Resilience: provide access to healthy food, provide on-site exercise facilities, set appropriate work hours



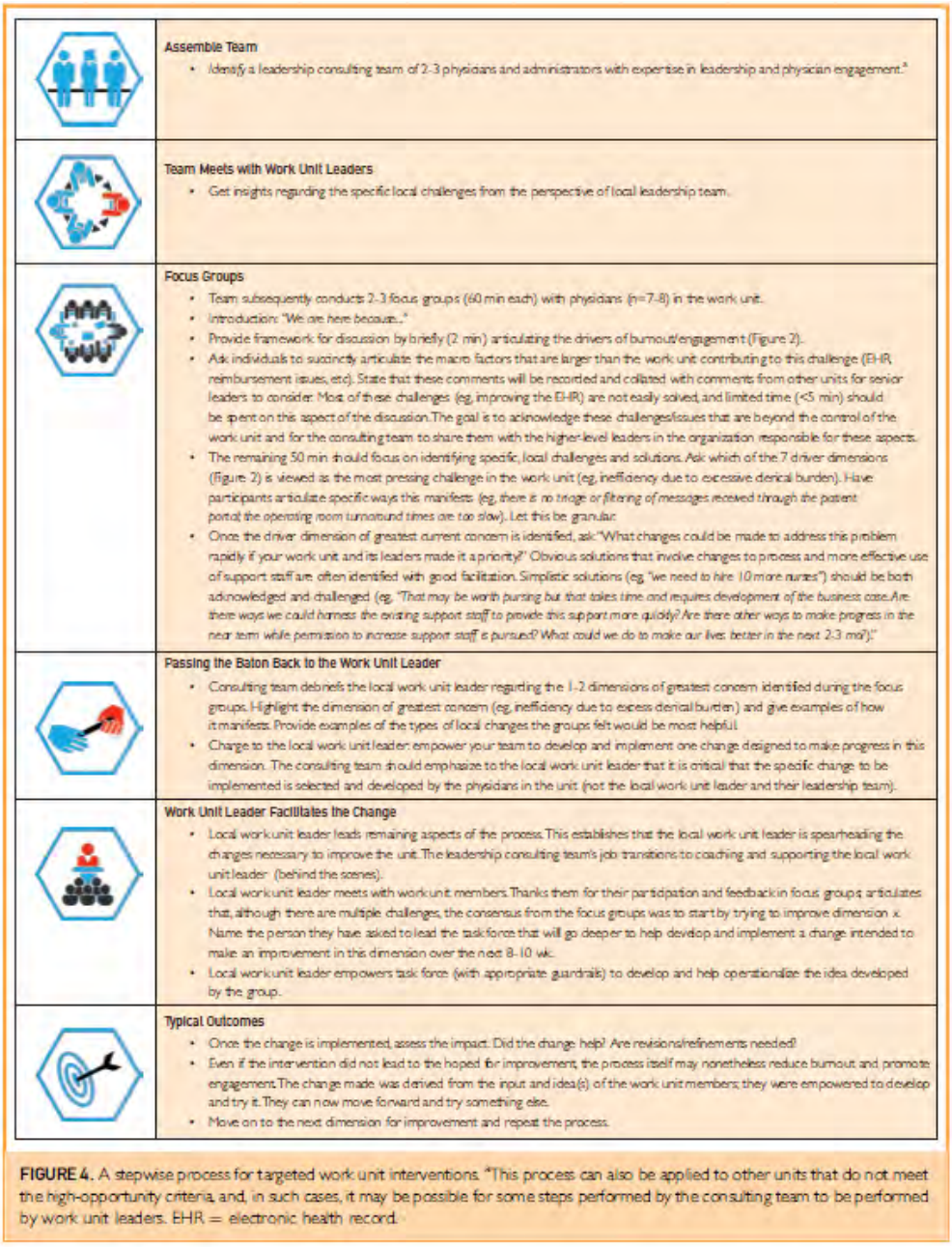
Physician Well-being: Practice Efficiency, Culture of Wellness, Personal Resilience (NEJM Catalyst Article, 2017)

Appendix B

Step 3: Operationalize your team

<u>Equip Wellness Champions with a well-designed blueprint for change</u>

Assemble a team of work-unit leaders and interested individuals (Wellness Champions) to facilitate and support wellness interventions. These local leaders can use the above stepwise process to gather perspectives, select interventions, support those implementing change, and track outcomes.



Assemble Team

- Identify a leadership consulting team of 2-3 physicians and administrators with expertise in leadership and physician engagement.*

Team Meets with Work Unit Leaders

- Get insights regarding the specific local challenges from the perspective of local leadership team.

Focus Groups

- Team subsequently conducts 2-3 focus groups (60 min each) with physicians (n=7-8) in the work unit.
- Introduction: "We are here because..."
- Provide framework for discussion by briefly (2 min) articulating the drivers of burnout/engagement (Figure 2).
- Ask individuals to succinctly articulate the macro factors that are larger than the work unit contributing to this challenge (EHR, reimbursement issues, etc). State that these comments will be recorded and collated with comments from other units for senior leaders to consider. Most of these challenges (eg, improving the EHR) are not easily solved, and limited time (<5 min) should be spent on this aspect of the discussion. The goal is to acknowledge these challenges/issues that are beyond the control of the work unit and for the consulting team to share them with the higher-level leaders in the organization responsible for these aspects.
- The remaining 50 min should focus on identifying specific, local challenges and solutions. Ask which of the 7 driver dimensions (Figure 2) is viewed as the most pressing challenge in the work unit (eg, inefficiency due to excessive clerical burden). Have participants articulate specific ways this manifests (eg, *there is no triage or filtering of messages received through the patient portal; the operating room turnaround times are too slow*). Let this be granular.
- Once the driver dimension of greatest current concern is identified, ask: "What changes could be made to address this problem rapidly if your work unit and its leaders made it a priority?" Obvious solutions that involve changes to process and more effective use of support staff are often identified with good facilitation. Simplistic solutions (eg, "we need to hire 10 more nurses") should be both acknowledged and challenged (eg, *"That may be worth pursing but that takes time and requires development of the business case. Are there ways we could harness the existing support staff to provide this support more quickly? Are there other ways to make progress in the near term while permission to increase support staff is pursued? What could we do to make our lives better in the next 2-3 mo?)."*

Passing the Baton Back to the Work Unit Leader

- Consulting team debriefs the local work unit leader regarding the 1-2 dimensions of greatest concern identified during the focus groups. Highlight the dimension of greatest concern (eg, inefficiency due to excess clerical burden) and give examples of how it manifests. Provide examples of the types of local changes the groups felt would be most helpful.
- Charge to the local work unit leader: empower your team to develop and implement one change designed to make progress in this dimension. The consulting team should emphasize to the local work unit leader that it is critical that the specific change to be implemented is selected and developed by the physicians in the unit (not the local work unit leader and their leadership team).

Work Unit Leader Facilitates the Change

- Local work unit leader leads remaining aspects of the process. This establishes that the local work unit leader is spearheading the changes necessary to improve the unit. The leadership consulting team's job transitions to coaching and supporting the local work unit leader (behind the scenes).
- Local work unit leader meets with work unit members. Thanks them for their participation and feedback in focus groups; articulates that, although there are multiple challenges, the consensus from the focus groups was to start by trying to improve dimension x. Name the person they have asked to lead the task force that will go deeper to help develop and implement a change intended to make an improvement in this dimension over the next 8-10 wk.
- Local work unit leader empowers task force (with appropriate guardrails) to develop and help operationalize the idea developed by the group.

Typical Outcomes

- Once the change is implemented, assess the impact. Did the change help? Are revisions/refinements needed?
- Even if the intervention did not lead to the hoped for improvement, the process itself may nonetheless reduce burnout and promote engagement. The change made was derived from the input and idea(s) of the work unit members; they were empowered to develop and try it. They can now move forward and try something else.
- Move on to the next dimension for improvement and repeat the process.

FIGURE 4. A stepwise process for targeted work unit interventions. *This process can also be applied to other units that do not meet the high-opportunity criteria, and, in such cases, it may be possible for some steps performed by the consulting team to be performed by work unit leaders. EHR = electronic health record.

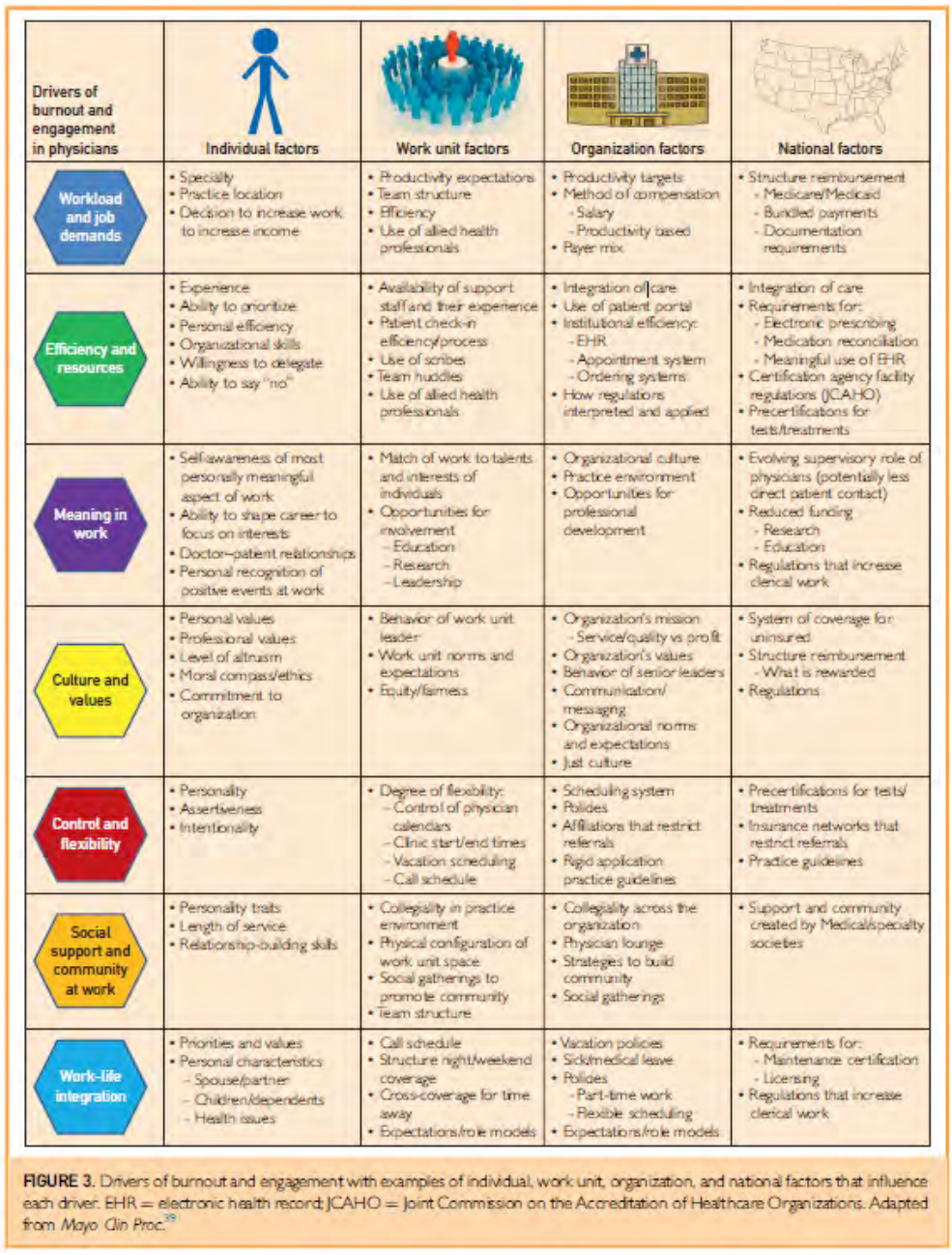
Executive Leadership & Physician Well-being: Nine Organizational Strategies (Shanafelt, Mayo Clin Proc, 2017)

Appendix C

Step 4: Select the level of intervention(s) desired

Level of Intervention:

Wellness Champions should consider the appropriate level at which to make implementations. For example, providing physicians with gratitude journals can impact the culture of wellness at the individual level whereas EHR enhancements should be implemented at the work-unit level.



Drivers of burnout and engagement in physicians	Individual factors	Work unit factors	Organization factors	National factors
Workload and job demands	• Specialty • Practice location • Decision to increase work to increase income	• Productivity expectations • Team structure • Efficiency • Use of allied health professionals	• Productivity targets • Method of compensation - Salary - Productivity based • Payer mix	• Structure reimbursement - Medicare/Medicaid - Bundled payments - Documentation requirements
Efficiency and resources	• Experience • Ability to prioritize • Personal efficiency • Organizational skills • Willingness to delegate • Ability to say "no"	• Availability of support staff and their experience • Patient check-in efficiency/process • Use of scribes • Team huddles • Use of allied health professionals	• Integration of care • Use of patient portal • Institutional efficiency: - EHR - Appointment system - Ordering systems • How regulations interpreted and applied	• Integration of care • Requirements for: - Electronic prescribing - Medication reconciliation - Meaningful use of EHR • Certification agency facility regulations (JCAHO) • Precertifications for tests/treatments
Meaning in work	• Self-awareness of most personally meaningful aspect of work • Ability to shape career to focus on interests • Doctor–patient relationships • Personal recognition of positive events at work	• Match of work to talents and interests of individuals • Opportunities for involvement – Education – Research – Leadership	• Organizational culture • Practice environment • Opportunities for professional development	• Evolving supervisory role of physicians (potentially less direct patient contact) • Reduced funding - Research - Education • Regulations that increase clerical work
Culture and values	• Personal values • Professional values • Level of altruism • Moral compass/ethics • Commitment to organization	• Behavior of work unit leader • Work unit norms and expectations • Equity/fairness	• Organization's mission - Service/quality vs profit • Organization's values • Behavior of senior leaders • Communication/ messaging • Organizational norms and expectations • Just culture	• System of coverage for uninsured • Structure reimbursement - What is rewarded • Regulations
Control and flexibility	• Personality • Assertiveness • Intentionality	• Degree of flexibility: – Control of physician calendars – Clinic start/end times – Vacation scheduling – Call schedule	• Scheduling system • Policies • Affiliations that restrict referrals • Rigid application practice guidelines	• Precertifications for tests/ treatments • Insurance networks that restrict referrals • Practice guidelines
Social support and community at work	• Personality traits • Length of service • Relationship-building skills	• Collegiality in practice environment • Physical configuration of work unit space • Social gatherings to promote community • Team structure	• Collegiality across the organization • Physician lounge • Strategies to build community • Social gatherings	• Support and community created by Medical/specialty societies
Work-life integration	• Priorities and values • Personal characteristics - Spouse/partner - Children/dependents - Health issues	• Call schedule • Structure night/weekend coverage • Cross-coverage for time away • Expectations/role models	• Vacation policies • Sick/medical leave • Policies - Part-time work - Flexible scheduling • Expectations/role models	• Requirements for: - Maintenance certification - Licensing • Regulations that increase clerical work

FIGURE 3. Drivers of burnout and engagement with examples of individual, work unit, organization, and national factors that influence each driver. EHR = electronic health record; JCAHO = Joint Commission on the Accreditation of Healthcare Organizations. Adapted from *Mayo Clin Proc*.[39]

Executive Leadership & Physician Well-being: Nine Organizational Strategies (Shanafelt, Mayo Clin Proc, 2017)

Appendix C

Step 5: Equip physician leaders to motivate, inspire, and develop physicians within their departments

Measure Leadership Skills & Provide Leadership Training:

Wellness interventions at Mayo included measuring the leadership skills of their current leaders in order to assess their ability to develop physicians within their departments (see questionnaire above). Leaders were then provided with high-quality training to maximize their ability to motivate and inspire their physicians, thus resulting in lower levels of burnout and increased physician engagement at work.

- Leadership abilities can impact physician well-being and burnout
- Consider measuring current leadership capabilities and targeting areas for improvement
- Institute successful physician leadership training programs to equip current physician leaders with the tools for successful leadership

TABLE 3. Leadership Qualities of Immediate Supervisors and the Prevalence of Burnout and Satisfaction in the Physicians They Supervise

	Burnout (% [95% CI])			Satisfaction (% [95% CI])		
Leadership quality	Prevalence of those rating leader favorably	Prevalence of those rating leader unfavorably	*P* value	Prevalence of those rating leader favorably	Prevalence of those rating leader unfavorably	*P* value
Holds career development conversations with me	36 (34.1-38.4)	51 (47.5-55.2)	<.001	82 (80.2-83.5)	51 (46.6-55.1)	<.001
Inspires me to do my best	36 (33.6-37.8)	52 (48.6-56.3)	<.001	83 (81.6-84.8)	46 (42.2-50.5)	<.001
Empowers me to do my job	35 (33-37.1)	56 (52.4-60.4)	<.001	86 (84.9-87.8)	46 (41.8-50.1)	<.001
Is interested in my opinion	36 (33.7-37.9)	54 (49.6-57.5)	<.001	85 (83.4-86.5)	48 (44.1-52.5)	<.001
Encourages employees to suggest ideas for improvement	37 (34.5-38.6)	52 (48-56.4)	<.001	86 (84.9-87.8)	53 (48.7-57.1)	<.001
Treats me with respect and dignity	38 (35.6-39.5)	56 (50.7-61.9)	<.001	94 (93.1-95.1)	69 (64.7-72.5)	<.001
Provides helpful feedback and coaching on my performance	35 (33.1-37.4)	50 (46.5-53.6)	<.001	78 (76.2-79.7)	41 (37-45.4)	<.001
Recognizes me for a job well done	36 (33.9-38)	53 (48.6-56.5)	<.001	84 (82.8-85.9)	48 (43.5-51.9)	<.001
Keeps me informed about changes taking place at Mayo Clinic	37 (34.5-38.6)	53 (49-57.7)	<.001	88 (86.7-89.4)	54 (49.8-58.1)	<.001
Encourages me to develop my talents and skills	35 (33.2-37.3)	54 (50.4-58)	<.001	84 (82.1-85.3)	45 (40.4-48.8)	<.001
I would recommend working for your immediate supervisor	36 (34.1-38.2)	53 (49.3-57.6)	<.001	87 (86-88.8)	49 (44.9-53.3)	<.001
Overall, how satisfied are you with your immediate supervisor	36 (34-38.1)	53 (49-57)	<.001	87 (85.3-88.2)	47 (42.5-50.7)	<.001

Impact of Organizational Leadership on Physician Burnout and Satisfaction
(Mayo Clin Proc, 2015)
Appendix D

Step 6: Consider organizational strategies that have been successful in other institutions

Example #1:

Controlled Interventions to Reduce Burnout in Physicians: A Systematic Review & MetaAnalysis

- This meta-analysis demonstrated that wellness interventions directed toward individual physicians as well as interventions directed to organizations were associated with reductions in physician burnout.
- However, organization-directed interventions demonstrated the strongest effectiveness
- Efficacious interventions included:
    - Scheduling changes
    - Reductions in the intensity of workload
    - Improved teamwork
    - Changes in work evaluation
    - Supervision to reduce job demand and enhance job control
    - Increasing the level of participation in decision making.
- *Controlled Interventions to Reduce Burnout in Physicians: A Systematic Review & MetaAnalysis*
  (Panagioti, JAMA, 2017)
  Appendix E

Example #2:

Executive Leadership & Physician Well-being: Nine Organizational Strategies

- This study identified organizational level interventions that successfully reduced burnout and improved physician engagement in their work. meta-analysis demonstrated that wellness interventions directed toward individual physicians

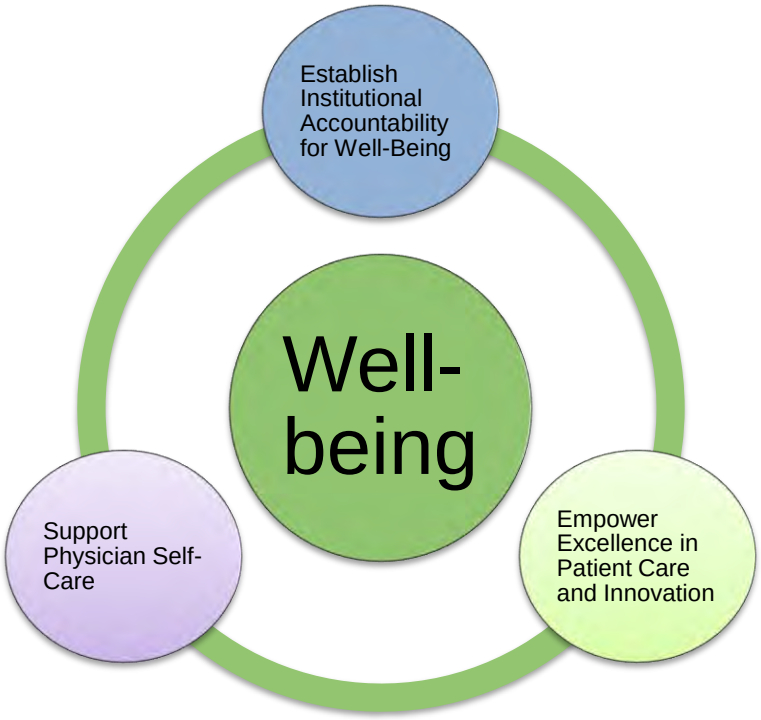
FIGURE 5. Organizational strategies to reduce burnout and promote physician engagement. [a]Often will focus on improving efficiency and reducing clerical burden but should focus on whichever driver dimension (Figure 1) deemed most important by members of the work unit (Figure 3).

Executive Leadership & Physician Well-being: Nine Organizational Strategies
(Shanafelt, Mayo Clin Proc, 2017)
Appendix C

Step 7: Consider the recommendations of the VUMC Physician Wellness Task Force

VUMC Task Force for Physician Empowerment & Well-Being

- Vanderbilt University Medical Center convened a Task Force in April of 2017 in response to the national epidemic of physician burnout. Using results from our faculty survey as well as data gleaned from literature reviews and institutional site visits, the Task Force created a set of recommendations to enhance physician wellness across the medical center. The Task Force has attempted to describe the future that physicians want at VUMC, and recommended strategies and action plans on how to achieve these goals with concrete details for consideration in their execution.
- The recommendations address three primary visions:
    - Establish Institutional Accountability for Well-being
        - Establish well-being as a foundation of the institution
        - Master compassion and respect
        - Incorporate well-being into leadership training
    - Empower Physician Excellence in Patient Care and Innovation
        - Elevate distressed work-units
        - Include an inclusive process improvement plan
        - Optimize staffing and systems
    - Support Physician Self-Care
        - Reduce barriers to self-care
        - Influence health status
        - Build a supportive community
- *See Appendix F for specific recommendations*



Step 8: Consider specific interventions that address unique needs in your department

Example #1:

Provide access to helpful wellness portals or create your own departmental portal

- There are many websites that can direct physicians to organizational and community resources that will support their personal wellbeing.
- Educating physicians on the existence and utility of these resources can be useful.
- Such website may include wellness self-measurement tools, healthy tips (exercise, depression, resilience), links to classes, links to immediate help (suicide hotline, mental health appointment, EAP counseling), volunteer opportunities, etc.
- Consider creating your own specific departmental/division portal that highlights wellness activities and resources pertinent to the needs of your physicians
- Examples include:
    - Stanford Wellness program: https://wellmd.stanford.edu/
    - VUMC Housestaff Wellness portal: https://gme.mc.vanderbilt.edu/HW/
    - VUMC Work/Life Connections: https://www.vumc.org/health-wellness/worklife-connections

Example #2:

Develop a Peer Support program

- Challenging moments, bad outcomes, and any number of difficult clinical experiences can cause emotional stress and even distress for practicing physicians. Peer Support programs are structured outreach programs that offer confidential support by trained physician volunteers to colleagues in these difficult moments.
- *Example:*
  Peer Support for Clinicians: A Programmatic Approach
  (Shapiro & Galowitz, Acad Med, 2016)
  Appendix G

Example #3:

Create and utilize Affinity Groups

- "Affinity Groups" are groups of faculty that come together related to a shared interest or goal. The formation and support of affinity groups has been shown to improve morale and foster resilience among medical professions. Examples of affinity groups might include working mothers, runners, jazz musicians, etc.
- *Example:*
  Fostering Resilience Among Mothers Under Stress: Authentic Connections Groups for Medical Professionals
  (Luthar, Womens Health Issues, 2017)
  Appendix H

Example #4:

Share resilience strategies and cultivate space for their utilization

- Providing physicians with the strategies that will enable them to develop grit and resilience can help reduce burnout and help physicians find meaning at work.
- *Example:*
  If Every Fifth Physician is Affected by Burnout, What About the Other Four? Resilience Strategies of Experienced Physicians
  (Zwack & Schweitzer, Acad Med, 2013)
  Appendix I

Table 1: Resilience Strategies: Practices & Routines
Leisure-time activity
Quest for and cultivation of contact with colleagues
Cultivation of relations with family and friends
Proactive engagement with the limits of one's own skills
Personal reflection and goal-setting

Table 2: Resilience Strategies: Attitudes
Acceptance and realism
Self-awareness and reflexivity
Active engagement with the downside of the medical profession
Accepting personal boundaries
Recognizing when change is necessary

Resources Appendix

A. Swensen S, Kabcenell A, Shanafelt T. Physician-organization collaboration reduces physician burnout and promotes engagement: The Mayo Clinic Experience. J Healthcare Management. 2016;61(2):105-127.
B. Bohman et al. Physician Well-being: The Reciprocity of Practice Efficiency, Culture of Wellness, Personal Resilience. NEJM Catalyst Article, 2017
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D. Shanafelt TD, Gorringe G, Menaker R, et al. Impact of organizational leadership on physician burnout and satisfaction. Mayo Clin Proc. 2015;90(4):432-440.
E. Panagioti M, Panagopoulou E, Bower P, Lewith G, Kontopantelis E, Chew-Graham C, Dawson S, van Marwijk H, Geraghty K, Esmail A. Controlled Interventions to Reduce Burnout in Physicians A Systematic Review and Meta-analysis. JAMA Intern Med. 2017;177(2):195-205.
F. Recommendations of the VUMC Task Force for Empowerment and Well-being
G. Shapiro J, Galowitz P. Peer Support for Clinicians: A Programmatic Approach. Acad Med. 2016;91(9):1-5.
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I. 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;88:382-389.

Appendix A

Physician–Organization Collaboration Reduces Physician Burnout and Promotes Engagement: The Mayo Clinic Experience

Stephen Swensen, MD, medical director, Office of Leadership and Organization Development, and professor of radiology, Mayo Medical School, Rochester, Minnesota; Andrea Kabcenell, RN, vice president, Institute for Healthcare Improvement, Cambridge, Massachusetts; and Tait Shanafelt, MD, director, Program on Physician Well-being, professor of medicine, Mayo Medical School, and president, Mayo Clinic Staff, Rochester

EXECUTIVE SUMMARY

The process of creating healthy organization–physician relationships is critical to organizational success. Partnerships in process improvement can nurture these relationships and mitigate burnout by meeting physicians' psychological needs. To flourish, physicians need some degree of choice (control over their lives), camaraderie (social connectedness), and an opportunity for excellence (being part of something meaningful). Organizations can provide these opportunities by establishing constructive organization–physician relationships and developing physician leaders. We present a case study from the Mayo Clinic that supports the foundational principles of a physician-engagement model.

We developed the Listen-Act-Develop model as an integrated strategy to reduce burnout and engage physicians in the mission of the organization. The intent of the model is to maximize physician wellness by fostering engagement and mitigating the drivers of burnout. This model provides a path to increase physician satisfaction and meaning in work and to improve organizational effectiveness.

For more information about the concepts in this article, contact Dr. Swensen at swensen.stephen@mayo.edu.

INTRODUCTION

Physician Burnout: The Challenge

Burnout is a pervasive international problem affecting the healthcare workforce. It is a syndrome of depersonalization, emotional exhaustion, and a sense of low personal accomplishment leading to decreased effectiveness at work (Maslach, Jackson, & Leiter, 1996). In other words, a burned-out physician is cynical and exhausted and feels ineffective in his or her work (Leiter, Hakanen, Toppinen-Tanner, Koskinen, & Vaananen, 2013; Leiter, Laschinger, Day, & Oore, 2011; Maslach & Leiter, 2008). The syndrome primarily affects those in the "helping" professions, with recent studies suggesting that physicians are at particular risk (Shanafelt, Boone, et al., 2012).

The high prevalence of burnout among physicians results in loss of engagement and commitment (Dewa, Jacobs, Thanh, & Loong, 2014; Dewa, Loong, Bonato, Thanh, & Jacobs, 2014; Prins et al., 2010; Shanafelt, Balch, et al., 2009; Shanafelt, Boone, et al., 2012; Shanafelt, Raymond, et al., 2014; Shanafelt, Sloan, Satele, & Balch; Williams et al., 2001). The 5 out of every 10 physicians affected by burnout are unable to optimally care for their patients, much less engage in the development and sustenance of the systems in medical organizations that foster the best patient care (Dewa et al., 2014; Firth-Cozens & Greenhalgh, 1997; Prins et al., 2009; Shanafelt et al., 2010; Shanafelt, Hasan, et al., 2015; Wallace, Lemaire, & Ghali, 2009; Williams, Manwell, Konrad, & Linzer, 2007).

Addressing this threat to quality of care is a shared responsibility of physicians and their organizations. Accordingly, organizational efforts to deal with burnout are an essential step to enhance physician engagement and improve safety and teamwork (Dewa et al., 2014; Firth-Cozens & Greenhalgh, 1997; Prins et al., 2009; Profit et al., 2014; Shanafelt et al., 2010; Wallace et al., 2009; Williams et al., 2007). Many factors contribute to burnout, including high workloads; an inefficient environment; problems with work–life integration; lack of flexibility, autonomy, and control; and loss of meaning in work. Other factors, such as medical specialty, practice setting, and personality type, also play a role, as do sleep deprivation, exposure to patient suffering and death, experience with medical errors, and malpractice suits (Balch et al., 2011; Meier, Back, & Morrison, 2001; Shanafelt, Boone, et al., 2012; Shanafelt, Sloan, & Habermann, 2003). Physicians who suffer from burnout are impaired (Shanafelt et al., 2010), and they and their organizations are at risk of having higher rates of medical errors (Dyrbye et al., 2010; Shanafelt et al., 2010; West et al., 2006; West, Tan, Habermann, Sloan, & Shanafelt, 2009), less professionalism (Dyrbye et al., 2010; Shanafelt, Bradley, Wipf, & Back, 2002; Shanafelt et al., 2010; West, Shanafelt, & Kolars, 2011), lower patient satisfaction (DiMatteo et al., 1993), and lower productivity (Dewa et al., 2014), as well as more turnover (Shanafelt, Raymond, et al., 2014; Shanafelt, Sloan, et al., 2011) and suicidal ideation (Dyrbye et al., 2008; Shanafelt, Balch, et al., 2011).

Burnout also erodes pride, idealism, and dedication (Leiter et al., 2011; Leiter et al., 2013; Maslach & Leiter, 2008). A strong connection exists between higher

rates of provider burnout and a poorer safety culture (Profit et al., 2014). When physicians are burned out, healthcare systems' performance is suboptimal. Thus, stronger partnerships and wellness benefit the individual physician, as well as facilitate the organization's ability to deliver high-value care (Wallace et al., 2009).

Physician Burnout: The Opportunity

The effort to eliminate burnout is motivated by a genuine interest in the well-being of patients and providers. Reducing burnout results in improved quality, safety, and efficiency and lower turnover rates (Epstein & Krasner, 2013; Shanafelt, Kaups, et al., 2014; Shanafelt, Sloan, et al., 2011). In addition, optimal organizational effectiveness has as its foundation an engaged workforce. High-quality leadership is critical to employee engagement, as well as to the financial performance of the institution (Day & Lord, 1988). Organizations that make investments in leadership development experience substantially higher returns than those that do not (Bassi & McMurrer, 2007).

The process of addressing the drivers of physician burnout will also deliver business results (Swensen, Dilling, Mc Carty, Bolton, & Harper, 2013). Clinician engagement is empirically linked to more effective organizations, with outcomes including lower turnover rates, superior clinical outcomes, better patient experience, and superior financial performance (Jessee & Rowlee, 2013).

Staff engagement is related to the practice of participative management, social support, and team interaction. Engaged staff members exhibit more organizational citizenship behavior (i.e., behavior that goes beyond the basic job description), which benefits the organization (Koys, 2001; Lee & Allen, 2002; Posdakoff & MacKenzie, 1994; Schaufeli & Bakker, 2004).

Engagement also is associated with superior performance (West & Dawson, 2012). Physicians experience highest levels of engagement when they have a degree of control over their work environment. Engaged physicians tend to receive higher patient satisfaction ratings (Bezrukova, Thatcher, Jehn, & Spell, 2012; Dixon-Woods et al., 2013; Ham, 2014; Plsek, 2013).

Evidence also suggests that organizations with high staff morale outperform those with low morale (Griffith, 2004; Griffeth, Hom, & Gaertner, 2000; Leveck & Jones, 1996; Ostroff, 1992; Ryan, Schmit, & Johnson, 1996). A meta-analysis of nearly 8,000 business units examined the relationship of staff satisfaction and engagement with the outcomes of productivity, customer satisfaction, profit margin, employee turnover, and on-the-job injuries. Employee satisfaction and engagement were strongly related to these outcomes (Harter, Schmidt, & Hayes, 2002). Low morale is expensive in many ways (Schlesinger & Heskett, 1991).

ORGANIZATIONAL DESCRIPTION

In 2015, the Mayo Clinic celebrated its 150th anniversary. It is the first and largest physician-led, integrated, multispecialty medical group practice in the world (Berry & Seltman, 2008) and is near the top of all major published quality indexes (Olsen & Dacy, 2014)

despite having costs that are far below average (Wennberg, Fisher, Goodman, & Skinner, 2008). Although burnout rates at Mayo Clinic are currently approximately two thirds the national average, burnout still affects a substantial number of physicians, which leadership takes seriously (Shanafelt, Hasan, et al., 2015). The institution performs well on quality measures such as readmissions, complications, infections, resource use, and survival rates (*Consumer Reports*, 2013; Leapfrog Group, 2012). Patient satisfaction is high, with more than 90% voluntarily sharing favorable word-of-mouth feedback. Mayo Clinic has 4,100 physicians and scientists on staff, more than 61,000 employees overall, medical practices in 77 communities, 24 hospitals, $10 billion in gross revenue, and the highest brand preference among academic medical centers (Berry & Seltman, 2008).

All Mayo Clinic physicians at the group practices in Minnesota, Arizona, and Florida are employed and work in an entirely salaried system. The Mayo Clinic Health System (a family of clinics, hospitals, and healthcare facilities serving more than 60 communities in Iowa, Georgia, Wisconsin, and Minnesota) maintains a hybrid model in which a majority of physicians are employed under different compensation models (Mayo Clinic, 2013; Viggiano, Pawlina, Lindor, Olsen, & Cortese, 2007). The recruitment and hiring philosophy at Mayo Clinic is "we are hiring you for a career, not just a job." As a result, the organization has some of the lowest attrition rates in the country; only 2.2% of physicians and 4.5% of nurses leave the institution per year (Berry & Seltman, 2014). In addition, for 11 consecutive years, *Fortune* (2016) has named the Mayo Clinic one of the 100 best companies to work for.

Distinctive organizational design features may influence staff engagement. The Mayo Clinic Model of Care is essentially one of patient-centered participative management (Berry & Seltman, 2014). The Listen-Act-Develop model is, at its core, a vehicle of participative management (Kim, 2002). These long-standing practices have contributed to staff engagement and organizational durability.

Organizational improvements measured at the clinical unit level may improve or help maintain credibility, respect, fairness, pride, camaraderie, and low staff turnover. Research supports a relationship between satisfaction and engagement and turnover and organizational effectiveness (Griffeth, Hom, & Gaertner, 2000; Koys, 2001; Posdakoff & MacKenzie, 1994).

THE LISTEN-ACT-DEVELOP MODEL FOR PHYSICIAN ENGAGEMENT

The Listen-Act-Develop model for physician engagement is empirically validated with decades of experience at our institution.

Addressing burnout involves mitigating the environmental drivers of burnout and bolstering individual resiliency. Partnership in improving the practice environment transforms the physician's role from "carpenter" to "architect" and engages physicians in improving care for their patients and the sustenance of the organization. The Listen-Act-Develop model draws from

teachings from the fields of organizational psychology and social science and has been refined through the Mayo Clinic experience with the Quality Academy, Commitment to Safety Team-Based Engagement Model, and Institutional Burnout–Engagement Initiative. It is intended to do the following:

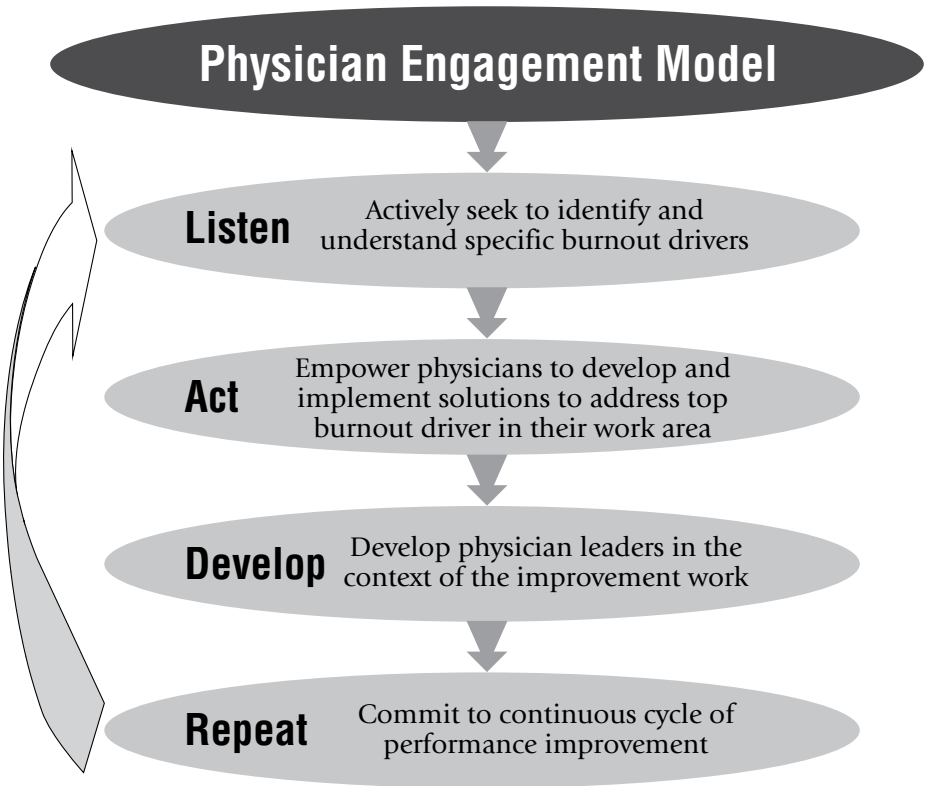
- Nurture the psychological needs of choice, camaraderie, and excellence
- Foster healthy physician–organization relationships
- Identify drivers of burnout
- Alleviate burnout by improving processes and systems of care
- Facilitate teamwork
- Support development of physician leadership
- Increase physician engagement in the shared organization mission

The four steps in the process are as follows (Figure 1):

Listen

- Actively seek to identify and understand specific burnout drivers
- Convene focus groups of frontline physicians to discuss and identify unique local opportunities to improve care of patients and mitigate the drivers of burnout
- Listen to physicians' concerns

FIGURE 1
Listen-Act-Develop Model



- Create a single, meaningful, and actionable burnout mitigation plan focused on the driver of greatest concern identified in focus group sessions

Act

- Empower physicians to develop and implement solutions to address their prioritized burnout driver in the work area defined in step 1.
- Identify physician champions and work in partnership with them on the prioritized initiative.
- Assemble a multidisciplinary, fully resourced team with ample funded time for all members.
- Find a solution or refine the process. Facilitate implementation.
- Monitor outcomes, safety, service, and/or cost improvements.
- Recognize accomplishments.
- Communicate results (successes and failures) to all staff members.

Develop

- Select and develop physician leaders in the context of the improvement work.
- Use the Listen-Act-Develop model as part of the leadership development process.
- Support physician leadership development with action learning, coaching, mentoring, assessment, assignments, and thoughtful planning of goals.
- Provide feedback to frontline leaders from the colleagues with whom they work.
- Provide resources to help them continue to develop as a leader, primarily on the burnout mitigation improvement teams.
- Provide support including executive coaching and other offerings specifically designed to enhance a leader's ability to engage staff and mitigate burnout.

Repeat

- Commit to a continuous cycle of performance improvement.
- Revisit findings from focus groups to identify the next round of improvement work related to burnout drivers.

The foundation of the model is based on organization-sponsored practice improvement initiatives conceived, developed, and implemented by staff members (Dilling & Swensen, 2013; Morgenthaler et al., 2012; Swensen, Dilling, Harper, & Noseworthy, 2012; Swensen et al., 2009; Swensen, Dilling, et al., 2013; Swensen, Pugh, et al., 2013). The experience is exemplified by four development programs designed to improve the quality of patient care, enhance the culture of safety, and reduce physician burnout: (1) The Quality Academy, (2) Commitment to Safety Team-based Engagement Model, (3) Institutional Burnout-Engagement Initiative, and (4) Office of Leadership and Organization Development (OLOD).

The Quality Academy

Our organization and leadership development experience with the Quality Academy forms part of the basis and rationale for the Listen-Act-Develop model. The Quality Academy was established in July 2006 to provide time and resources for education of Mayo Clinic staff members in quality

improvement methods. Individuals and teams learn ways to work together more effectively and efficiently to reduce waste and improve outcomes.

The Mayo Quality Fellows program is one of several offerings that provides quality improvement education and certification for individuals and teams who successfully complete improvement projects. Participants learn to identify and measure healthcare quality, collect and analyze local data, and pinpoint waste. Subsequently, the program helps participants examine and identify ways to improve workflow, identify cost savings, and improve patient care. To date, 37,168 (≈62%) of the approximately 60,000 Mayo Clinic employees have been certified as bronze, silver, gold, or diamond quality fellows.

This leadership and organization development program has catalyzed more than 6,000 team-based quality improvement projects. Almost every improvement project consists of a multidisciplinary team with frontline provider involvement and is sponsored by an institutional leader. The vast majority of the improvement projects have focused on provider-identified opportunities to address process inefficiencies (Swensen et al., 2009).

Commitment to Safety: Team-Based Engagement Model

In 2009, the Mayo Clinic board of governors began an in-depth organization-wide culture of safety initiative. This initiative began with a survey of all employees, of whom 72% responded. More than 200 clinical unit teams and 10,000 staff members have participated in this initiative to improve leadership, patient safety culture, workplace morale, information handoffs between clinicians, and teamwork scores. Organization leaders have monitored results and supported the complete rollout to more than 800 clinical unit teams involving 61,000 staff members. The clinical units engaged have improved leadership, patient safety, and teamwork measures. The local culture has been positively affected by daily huddles and early senior leadership engagement. Results include improvement in workplace morale (an increase of 17%), teamwork (12%), and satisfaction with information handoffs (11%).

Each project in this initiative has been led by a physician–nurse–administrator leadership triad supported by systems engineers and organization development professionals. These teams have subsequently engaged the physician and nurse leaders of each unit. The process involves preintervention and postintervention culture-of-safety surveys, focus groups, and rapid-cycle Plan-Do-Study-Act process improvement efforts to address the opportunities identified by the multidisciplinary members of the units. Similar work with positive results at other institutions has also been reported (Leonard & Frankel, 2015; Sexton et al., 2014).

Institutional Burnout–Engagement Initiative

Since 2013, the Mayo Clinic board of governors has sponsored an in-depth burnout-engagement initiative with physicians from seven high-opportunity clinical departments identified in our 2013 staff survey as having above-average burnout and below-average satisfaction.

A team of two physicians and one administrator first met with the division or department chair to obtain his or her insights into local challenges and issues. They then conducted multiple confidential focus groups with members of the division or department (each composed of six to eight physicians). The intent of the focus group is to identify the distinctive local and institutional drivers of burnout, as well as potential solutions. Department leaders are expected to take steps to mitigate the local drivers of burnout with physician-led multidisciplinary teams. The three-person team then met with the division or department chair to summarize the areas of greatest concern to staff and encourage him or her to conduct a follow-up forum with staff members to develop meaningful and actionable burnout mitigation activities in the work unit. In essence, this is the Listen-Act-Develop model for physician engagement.

The institutional drivers of burnout identified through this process are communicated to the appropriate governance or management groups and addressed by means of a department–organization partnership (Sexton et al., 2014). The other 130 or so divisions and departments are expected to follow the same process of identifying and addressing local drivers of burnout, but without institutional facilitators. A *Burnout Mitigation Process Playbook* was developed for division and department chairs to facilitate the burnout mitigation process (Dilling & Swensen, 2013). Follow-up surveys of physicians (59% response rate) in these seven divisions and departments showed a median burnout reduction of 11 percentage points.

In addition to these efforts focused on physicians, a concerted effort was undertaken for allied health staff. After administration of the 2013 all-staff survey, work units were identified on the basis of lower scores for engagement and overall satisfaction (< 75% on overall satisfaction and < 78% on engagement). Targeted low-scoring units were expected to develop and implement action plans that responded to opportunities identified in the all-staff survey results. Fifty percent (158 of 316) of the targeted units experienced an increase in satisfaction, engagement, or both. Units in which the majority of staff members indicated that action planning was a joint effort between management and staff exhibited the most significant gains in engagement and overall satisfaction scores. Thus, developing collaborative action plans is key to improvement. Mayo Clinic's experience with the institutional burnout engagement initiative and participative management serves as the foundation for the Listen-Act-Develop model.

Office of Leadership and Organization Development

Our organization has extensive experience with leadership development, the third element of our Listen-Act-Develop model. Our approach to leadership and organization development is holistic, involving assessments, development programs, challenging management assignments, institutional projects, and coaching for physician leaders.

Successful teamwork requires leaders to engage colleagues in ways that create shared meaning and purpose. Our

team-based development system creates an environment conducive to developing leaders capable of leading staff in a consensus-driven organization that aspires to have a highly engaged workforce. Team-based collaboration drives the establishment and expansion of best practices, as well as holding oneself and others accountable to metrics for patients and colleagues.

Both the culture of safety and physician–staff burnout initiative embody the principles and practices of our leadership and organization development programs. Specifically, these programs develop leaders through action learning (de Haan & de Ridder, 2005; Dillworth & Willis, 2003; Hill, Leonard, & Sokol, 2006; Marquardt, Leonard, Freedman, & Hill, 2009). Both entail the support of leaders with institutional and departmental resources, including improvement experts, administrative leaders, physician leaders, and organization development leaders, as well as measurement and survey resources (Swensen et al., 2012).

The OLOD actively monitors, rates, and manages the succession pools of 232 physician and scientist leadership positions in our pipeline. Each pool is scored for leadership readiness, ethnic diversity, and gender diversity. The leadership development programs are overwhelmingly based on team-based experiences consistent with the Listen-Act-Develop model. The OLOD also supports the organization by providing development and performance opportunities for leaders in the context of staff engagement and burnout. The department chair's annual performance review includes three metrics: (1) assessment of leadership behavior in 12 dimensions (Shanafelt, Gorringe, et al., 2015), (2) staff satisfaction, and (3) staff burnout. OLOD also supports leaders with executive coaching, leader assessments, and action-learning programs.

THE FOUNDATIONAL PRINCIPLES

Combating physician burnout is a twofold process that involves (1) mitigating the structural and functional drivers of burnout (Linzer et al., 2005; Linzer et al., 2014; Shanafelt et al., 2003; Shanafelt et al., 2008; Shanafelt, Hasan, et al., 2015; Shanafelt, West, et al., 2009; Sinsky et al., 2013) and (2) bolstering individual resiliency (Beckman et al., 2012; Clever, 2001; Dyrbye, Satele, Sloan, & Shanafelt, 2013; Fortney, Luchterhand, Zakletskaia, Zgierska, & Rakel, 2013; Krasner et al., 2009; Quill & Williamson, 1990; Shanafelt, Chung, White, & Lyckholm, 2006; Shanafelt et al., 2003; Shanafelt, Oreskovich, et al., 2012; Shanafelt, Kaups, et al., 2014; Southwick & Charney, 2012; Zwack & Schweitzer, 2013).

Resiliency depends on many factors, some of which include social support, exercise and health, moral compass, mindfulness, optimism, cognitive flexibility, enjoyment, resilient role models, religion and spirituality, purpose, and growth (Clark et al., 2014; Ruotsalainen, Verbeek, Marine, & Serra, 2014; Sood, 2013; Southwick & Charney, 2012). Bolstering resiliency is a key to enhancing quality of care and sustainability of the healthcare workforce. The Listen-Act-Develop model is designed to address the institutional drivers of burnout and foster resiliency.

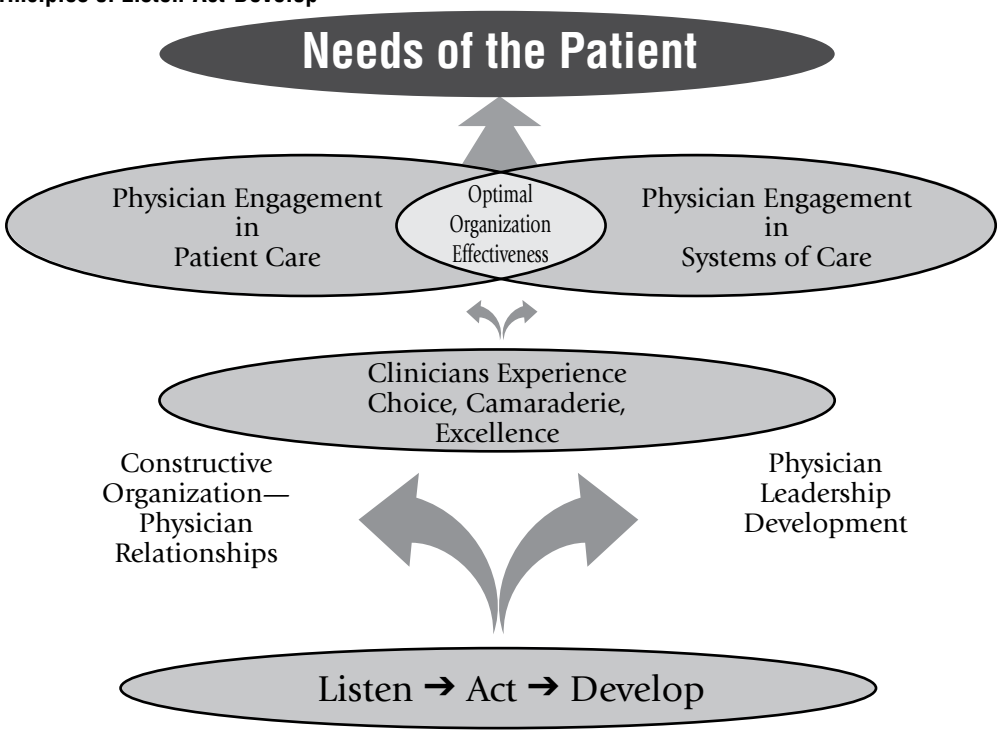
The principles of this approach are based on established teachings from the fields of organizational psychology and social science, which show a direct relationship between physician engagement and clinical and organizational performance (Ham, 2014; Lee & Allen, 2002).

While the drivers of burnout are somewhat universal (i.e., workload problems; inefficiency; lack of autonomy, flexibility, and control; loss of meaning; problems with work–life integration), the dominant factors and the way they manifest in each work unit are distinctive. Engaging colleagues by means of the Listen-Act-Develop model is critical to understanding and addressing the distinctive issues contributing to burnout in the work unit. Three principles support our strategy:

1. Addressing the psychological needs of people
2. Developing constructive organization–physician relationships
3. Sponsoring physician leadership development

Collectively, these elements raise organizational effectiveness and meet patients' needs (Figure 2) (Viggiano, Pawlina, Lindor, Olsen, & Cortese, 2007). We propose that the process of developing constructive organization–physician relationships and sponsoring leadership development via partnership

FIGURE 2
Principles of Listen-Act-Develop



with improvement work mitigates burnout by meeting the psychological needs of people. This, in turn, supports clinicians in their work with patients and the optimal functioning of the systems of care.

Addressing the Psychological Needs of People

To deliver highly reliable care, an organization needs some degree of workforce collectivism, including standardization of selected processes and systems. However, this standardization must be balanced by physicians' need for some control over their lives (Baard, Deci, & Ryan, 2004). The need for choice, camaraderie, and excellence can be facilitated by an organization that is in a position to supply meaningful work, a context for collegiality and teamwork, and sufficient flexibility. When multidisciplinary teams function well, staff engagement is higher and absenteeism and turnover are lower. Clinicians must work collaboratively across boundaries to provide reliable care for patients (D'Innocenzo, Mathieu, & Kukenberger, 2014; West & Lyubovnikova, 2013).

The organization also needs standard systems and processes for stability and improvement, and this requires clinician partnership. Performance and well-being at work are influenced by satisfaction of an individual's psychological needs, and an organization can provide opportunities to meet these needs (Schein, 2013). The organizational characteristics rated most highly by physicians are respect for competency and skills, feeling that opinions and ideas are valued, good relationships with physician colleagues, good work–life integration, and a voice in how time is structured and used (Vital Worklife, 2013).

Choice

Choice has been defined as experiencing some flexibility and control over one's life (deCharms, 1968; Deci, 1975). Achieving this has become more challenging now that approximately 75% of physicians work for hospitals, large practice groups, health maintenance organizations, or academic medical centers (Merritt Hawkins, 2012). A Kaiser Permanente study found that 58% of physicians experienced emotional exhaustion, a feature of burnout (Freeborn, 1998). The author found that physicians' sense of control over their practice environment (i.e., choice) was the most powerful predictor of well-being, satisfaction, and commitment to the organization. Optimal physician involvement includes participation in decision making, flexibility, and a role in managing the calendar (Freeborn, 1998). Some degree of choice also has implications for physical health. Marmot et al. (1991) found that employees with less control at work had higher blood pressure, burnout, back pain, clinical depression, absenteeism, and mortality.

Providing physicians control over their professional lives is an inherent trait of productive physician–organization partnerships that confers benefits on both individuals and their organizations (Sinsky et al., 2013). In a large study of small businesses, organizations that managed by means of greater self-determination and autonomy for staff grew at substantially

higher rates than command and control–oriented institutions. Their turnover rates were also severalfold lower (Baard et al., 2004).

The primary mitigation strategy for burnout is the development of a functional partnership between physicians and the medical center leadership that allows for physician input and creates a sense of choice for the clinicians. In other words, a sense of choice for physicians comes when they are approached as architects, not as carpenters.

Camaraderie

The need for *camaraderie* is defined as recognition from and connectedness to colleagues (Baumeister & Leary, 1995; Harlow & Suomi, 1970). Spending time with physician colleagues alleviates symptoms of burnout (Sinsky et al., 2013; West et al., 2014). Creating a culture of mutual respect is fundamental for camaraderie and functional organization–physician relationships. Success necessitates supporting clinical staff with behaviors that bolster a sense of appreciation, fairness, transparency, collaboration, and individual responsibility. Respect is the foundation of all of these behaviors. Mutual respect, teamwork, and collaboration are at the core of effective improvement efforts. Creating this type of climate leads to a supportive workplace that empowers colleagues to co-design meaningful improvement work (Leape et al., 2012).

Camaraderie and engagement are intertwined. Engagement is a mutual relationship in which the organization values the clinician and the clinician respects the organization (MacLeod & Clarke; Milliken, 2014; Rowling, 2012). Engagement is "an energetic state of involvement with personally fulfilling activities that enhance one's sense of professional efficacy" (Maslach & Leiter, 2008, p. 498).

Excellence

The need for *excellence* is defined as finding purpose and meaning at work stemming from success at delivering superlative patient-centered healthcare (Skinner, 1995; White, 1959). Research in prosocial motivation of healthcare providers supports the merit of an individual's need for purpose (Grant, 2008; Grant & Hofmann, 2011).

Common ground also exists between physicians and medical centers in the pursuit of excellence. Both care deeply about patient outcomes (quality, safety, satisfaction), wasted resources, and efficiency (Reinertsen, 2008). Many physicians may only be interested in the organization's processes and systems in the abstract. Leaders create the alignment, ensuring that the work is rewarding with links to results, impact, efficiency, and learning (Lindgren, Baathe, & Dellve, 2013). Work must facilitate the pursuit of excellence.

Medical center approaches to engage physicians in improving systems that support optimal care include using data to identify areas needing improvement, providing visible support through leadership of improvement work, identifying and developing physician champions to help engage peers, and communicating the value of clinicians' contributions (Liebhaber, Draper, & Cohen, 2009).

The balance of evidence indicates that satisfying human needs for *choice,*

camaraderie, and *excellence* will lead to lower burnout rates and greater clinician engagement in organizational goals. These same environmental factors that help reduce burnout also promote a culture of safety (Leape et al., 2012).

Developing Constructive Organization–Physician Relationships

Constructive physician–organization partnerships are relationships that evoke trust and have attributes of commitment and sincerity. They entail behaviors such as asking questions, sharing concerns, and engaging in problem solving and improvement projects. Physician–organization partnerships involve transparency. A leader at the front line of care helps motivate multidisciplinary teams, especially in the context of generating and implementing improvements. Administrators need physicians as much as physicians need administrators. When the relationship fails, the organization and the patient lose (Bohmer, 2011; Schwendimann et al., 2013; Swensen, Pugh, McMullan, & Kabcenell, 2013).

Constructive organization–physician relationships are indispensable to achieving optimal organizational effectiveness. Such relationships are also the key to nurturing an ecosystem conducive to choice, camaraderie and excellence. Physicians and organizations must work together to develop and nurture a synergistic relationship. They can be developed despite the conventional paradigm that assumes a tension between physicians' and organizational needs. There is a clear line of sight between burnout alleviation and purposeful organization–physician partnerships.

Physicians tend to be highly engaged with their work. However, they are often not engaged in the mission of their organization. Approximately two thirds of physicians rated a high degree of engagement with their work, but less than half scored similarly when asked to rate their degree of engagement with the medical center (Vital Worklife, 2013). Addressing this discrepancy by improving physician–organization partnerships begets greater volunteerism and teamwork, more involvement in process improvement, and lower burnout rates. When physicians are engaged, better communication, improved safety, and superior patient satisfaction result (DiMatteo et al., 1993; Dyrbye et al., 2010; Shanafelt, Bradley, Wipf, & Back, 2002; Shanafelt et al., 2010; West et al., 2006; West, Shanafelt, & Kolars, 2011; West, Tan, Habermann, Sloan, & Shanafelt, 2009). If performance improvement is to occur spontaneously, the clinicians in the system must feel connected to the organization's goals. And they must understand how they align with their own goals, which often center on providing excellent care to patients.

Limited physician participation in organizational improvement is a widespread issue despite recognition that physician participation is requisite for effectiveness (Greening, 2012; Guthrie, 2005; Liebhaber, Draper, & Cohen, 2009; Rundall, Davies, & Hodges, 2004; Walsh, Ettinger, & Klugman, 2009). To achieve optimal results for patients, physician involvement in healthcare improvement work is necessary (Berwick & Nolan, 1998). Working together to improve organization and physician

wellness will create and maintain a durable performance improvement culture. Change in medical centers depends on partnership with both independent and employed clinicians. (Hroscikoski et al., 2006; Kreindler et al., 2014; Nutting et al., 2010). Partnering on organizational work to improve performance is an indispensable precondition to providing safe and high-quality care (Gosfield & Reinertsen, 2008).

Participative management among clinicians and administrators facilitates physician engagement. Constructive partnerships are multidisciplinary, collaborative, and cooperative teamwork involving frontline providers and organization leaders engaged in process improvement. Working partnerships also mitigate burnout (Dunn, Arnetz, Christensen, & Homer, 2007; Sinsky et al., 2013). In essence, organizations should relate to physicians in the same manner that physicians partner with patients: "don't do to, don't do for, do with."

Organization leaders must solicit ideas for improvement from physicians and then act on these ideas. The leadership of one multisite primary care clinic promoted physician well-being by cultivating efficiency, autonomy, and meaning through a continuous improvement process. A longitudinal analysis showed that these efforts resulted in increased physician satisfaction with reduced burnout (Dunn et al., 2007).

Organizations can deploy several effective tactics to enhance clinician involvement in organizational improvements: (1) remove barriers to engagement, (2) commit to administrative support, and (3) prioritize efficiency and effectiveness work that is mutually beneficial (Baathe & Norback, 2013). These features are woven into our model.

Two high-impact engagement tactics have been closely linked to burnout eradication (Advisory Board Company, 2013). They are reflected in these survey responses from physicians (both are embedded in the model we propose):

- My ideas and suggestions are valued by my organization.
- My organization helps me deal with stress and burnout.

Physicians and administrators must work together with shared ownership. Without intention, the partnership does not evolve naturally, as the languages, cultures, and rules of the game differ for both groups (Kaissi, 2005).

Two major cultural changes need to be reconciled for physicians to engage fully in the organizational quality agenda:

- Organizational leaders must stop treating physicians as employees.
- Clinicians need to be embraced as partners in the delivery of care.

Physicians need to understand that their patient care responsibilities include sustaining the performance of the medical center as an integrated system that is necessary to perpetuate good patient care (Reinertsen, Gosfield, Rupp, & Whittington, 2007). Organizations need physician partners to design optimal care delivery systems. Collaborative engagement between medical and administrative staff is a prerequisite for consistently delivering improved results (Atkinson, Spurgeon, Clark, & Armit, 2011; Milliken, 2014; Rowling,

2012). These results, in turn, increase physician satisfaction, which raises quality of care, patient experience, and the appropriate use of institutional resources (Eisenberg, 1986). Augmenting clinician engagement in value creation work should be recognized as essential for the organization (Bakker, Albrecht, & Leiter, 2011).

Developing Physician Leaders

An integral part of constructive organization–physician relationships is sponsoring leadership development. Physician leaders working as equals with administrative leaders signals collaboration and partnership. Developing physician leaders ensures that clinicians gain a sense of choice, camaraderie, and performance excellence.

The effectiveness of frontline physician leadership is one of the most critical ingredients for success. For example, poor leader communication and lack of workplace fairness are primary drivers of dissatisfaction and burnout (Leiter et al., 2011; Leiter et al., 2013; Maslach & Leiter, 2008). The leadership performance of department chairs affects not only the productivity of each department but also the well-being of those they supervise. In a study of 2,813 physicians at Mayo Clinic, we evaluated leadership behavior in 12 dimensions. Chairs who were rated as more effective leaders had units with higher satisfaction and lower burnout. For every 1-point increase in a department chair's composite leadership score, there was a 9.0% increase in staff satisfaction and a 3.3% decrease in physician burnout ($p < .001$) (Shanafelt, Gorringe, et al., 2015).

Eradication of burnout is the job of our leaders. Healthcare systems operate more effectively and efficiently when physicians are satisfied with their professional environment (Beckley, 2003). Physicians' satisfaction with leaders is closely associated with the frequency with which leaders are perceived as exhibiting specific transformational behavior (i.e., idealized attributes, idealized behavior, inspirational motivation, intellectual stimulation, and individual consideration) (Menaker & Bahn, 2008).

The act of responding to identified improvement opportunities offers leadership development experience for physicians. An institution's offer of time to high-potential physician leaders to participate in improvement work is a genuine relationship builder. It also is an effective strategy for connecting with frontline staff who may be inclined to view administration as *them* instead of *us*.

Physicians receive little training in how to be effective leaders (Clark, Spurgeon, & Hamilton, 2008; Goldstein et al., 2009; Mountford & Webb, 2008). Consequently, medical centers need to develop physician leaders who can foster excellence, choice, and camaraderie. Leadership development programs send a message that organization–physician partnership is valued. In addition, social capital is the economic benefit to organizations accrued from the trust, cooperation, and connectedness of individuals and groups. There should be positive ramifications for social capital from the interdisciplinary improvement and leadership development programs grounded in action learning (Lester,

2013; Nahapiet & Ghoshal, 1998). Leaders matter (Bassi & McMurrer, 2007).

A primary driver of discontent is poor leadership. People don't leave organizations. They leave managers. Engaged physicians are personally motivated to help their organization succeed, willing to go beyond their job description and inspired to do their best work. Leaders cannot start talking about engaging physicians until they address the fact that 5 of 10 physicians are burned out (Shanafelt, Hasan, et al., 2015).

CONCLUSION

We describe a Listen-Act-Develop model for improving quality and safety, developing leaders, reducing burnout, and promoting physician engagement. This model incorporates a strategy for creating healthy physician–organization relationships to help achieve the organization's mission. We believe that developing effective relationships through process improvement efforts that recognize physicians' concerns and empower them to develop solutions mitigates physician burnout by addressing psychological needs for choice, camaraderie, and excellence.

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PRACTITIONER APPLICATION

Sunil Sinha, MD, FACHE, director, Clinical Quality and Patient Safety, ChenMed/JenCare Neighborhood Medical Centers, Miami, Florida

The patient–physician relationship has been identified as the single most important ingredient for achieving consistently high-quality, safe, and cost-effective healthcare outcomes. In support of this relationship, it is no less important that physicians have the time and ability to practice their craft, without intrusion and distractions. With the increasing complexity of the U.S. healthcare system, time and autonomy have become scarce commodities, contributing to physician burnout.

Having served in various leadership capacities in the Department of Veterans Affairs, a large integrated health system, and now with a national ambulatory practice group managing the care of patients enrolled in Medicare Advantage, I find the common challenge has been to provide physicians with the right tools, time, and autonomy to succeed. With the rapidly changing healthcare landscape and associated demands from payers, providers, and consumers, physicians are finding themselves increasingly marginalized and constantly being told to provide higher-quality care with fewer resources and in less time. Healthcare systems universally are in search of methodologies to align and engage physicians in ways that are mutually beneficial. Many scholarly articles, several of which are referenced in the study by Swensen et al., validate the importance of physician–institutional relationships for clinical and financial success. This article is particularly relevant and timely in light of the increasing number of physicians who are employed or in some type of contractual relationship with hospitals and health systems.

The Institutional Burnout–Engagement Initiative, rooted in the Listen-Act-Develop model, was conceived, developed, and implemented by staff members as an outcome of several other organizational development and training programs in the Mayo Clinic Health System. Health systems and practices nationally expend much in terms of time and money to develop physician capabilities so they may lead and assist in process and quality improvements, with the longer-term goal that some of these engaged partners will be future leaders. Many of these efforts are driven by internal experts or external consultants brought in to assess and address barriers

Appendix B

NEJM Catalyst

Care Redesign New Marketplace **Leadership** Patient Engagement

Physician Well-Being: The Reciprocity of Practice Efficiency, Culture of Wellness, and Personal Resilience

Article · April 26, 2017

Bryan Bohman, MD, Liselotte Dyrbye, MD, MHPE, Christine A. Sinsky, MD, Mark Linzer, MD, FACP, Kristine Olson, MD, MSc, Stewart Babbott, MD, Mary Lou Murphy, MS, Patty Purpur deVries, MS, Maryam S. Hamidi, PhD & Mickey Trockel, MD, PhD

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The quality and safety of patient care, and indeed the very vitality of our health care systems, depend heavily on high-functioning physicians. Yet recent data have revealed an extraordinarily high — and increasing — prevalence of physician burnout, defined as emotional exhaustion, interpersonal disengagement, and a low sense of personal accomplishment. In light of compelling evidence that burnout negatively affects patient care, health care leaders are rightly alarmed and are searching for answers.

> *These efforts will be most effective when they address drivers of physician well-being from each of the three reciprocally related domains of practice efficiency, a culture of wellness, and personal resilience."*

The resulting national dialogue on physician burnout presents an opportunity to address physician well-being more broadly, in that physician well-being should be viewed — to paraphrase the World Health Organization's well-known definition of health — as an optimal state of physical, mental, and social well-being, and not merely the absence of burnout. Professionally fulfilled physicians (defined as those who experience happiness or meaningfulness, self-worth, self-efficacy, and satisfaction at work) are better equipped not only to practice the art and science of clinical care, but also to lead the effort to identify and implement much-needed improvements to our systems of care.

The many drivers of both burnout and high professional fulfillment fall into three major domains: efficiency of practice, a culture of wellness, and personal resilience. Efficiency of practice and a culture of wellness are primarily organizational responsibilities, whereas maintaining personal resilience is primarily the obligation of the individual physician. Each domain reciprocally influences the others; thus, a balanced approach is necessary to build a stable platform that will drive sustained improvements in physician well-being and the performance of our health care systems.

The Reciprocal Domains of Physician Well-Being

Chart illustrating the 3 domains of physician well-being, with each domain reciprocally influencing the others.

Source: Patty Purpur de Vries
NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

Click To Enlarge.

While it is important to promote the well-being of all members of the health care team, we focus here on physician well-being for two reasons. First, physicians have been hard-hit by the organizational transformation of the health care system, resulting in an epidemic of burnout and declining professional fulfillment. They have suffered a reduction in their sense of professional autonomy, have experienced a significant increase in clerical duties, and are beholden to a growing array of imperfect and inconsistent quality and productivity metrics. Second, medical training has historically acculturated physicians to deny their own self-care in the service of others.

> *It is counterproductive to ask physicians to 'heal themselves' through superhuman levels of resilience even as the practice environment continues to deteriorate."*

In this context, it is counterproductive to ask physicians to "heal themselves" through superhuman levels of resilience even as the practice environment continues to deteriorate. Yet the majority of interventions and research related to physician wellness have focused on personal resilience (e.g., mindfulness), while organizational interventions are more difficult and are only beginning to emerge.

Health care organizations must embrace their responsibility to build an efficient practice environment and to foster a culture of wellness while also supporting physicians' efforts to improve their own resilience. This model in no way relieves physicians of their own professional obligation to build and nourish their personal resilience while simultaneously playing key roles in helping their organizations to build a culture of wellness and to improve the efficiency of practice. While this model is broadly applicable to any professional calling, many of the specific drivers within each domain are unique to physicians and demand tailored interventions.

Efficiency of Practice

Efficiency of practice is defined as the value-added clinical work accomplished divided by time and energy spent. Factors that contribute to physicians' efficiency of practice include workplace systems, processes, and practices that help physicians and their teams to provide compassionate, evidence-based care for their patients.

> *Health care organizations must embrace their responsibility to build an efficient practice environment and to foster a culture of wellness while also supporting physicians' efforts to improve their own resilience. This model in no way relieves physicians of their own professional obligation."*

Physicians have a deep intrinsic desire to provide optimal care for their patients. Excessive time pressures and chaotic work environments that impair patient care are thus associated with burnout. It follows that strategies that help clinicians to efficiently deliver high-quality care by re-engineering and continuously improving care processes and clinical workflows will improve

physician well-being. Key targets for improvement include the usability of electronic medical records, adequate staffing (allowing physicians to spend more time doing work for which they are uniquely trained), mitigating regulatory and documentation burdens, maximizing user-friendly decision support, and facilitating reliable care coordination.

Efficiency of practice reciprocally affects the other two domains in that those who practice in an efficient clinical setting will have more capacity to improve their personal resilience by engaging in positive health behaviors. As their well-being improves, they can also better contribute to their organization's culture of wellness through healthier interpersonal interactions and by encouraging others to care for their own wellness. This virtuous cycle of reciprocity is complete when a more resilient medical staff, embedded in a culture of wellness, is better able to partner with administrative leaders to drive further improvements in efficiency of practice.

Culture of Wellness

Culture of wellness is defined as a set of normative values, attitudes, and behaviors that promote self-care, personal and professional growth, and compassion for colleagues, patients, and self. Health care organizations that recognize physician well-being as a vital quality indicator will monitor and attend to it with sustained resourcing and an accountability structure that includes both clinical and administrative leadership. They will select leaders who exhibit characteristics and skills associated with the promotion of well-being and professional fulfillment and will support the development of those skills when there are gaps.

> *Clinical leaders are particularly well-positioned to lead a paradigm shift in rejecting the historic 'iron doc' culture by encouraging physicians to extend to themselves and their colleagues the same natural compassion that they show to their patients."*

Clinical leaders are particularly well-positioned to lead a paradigm shift in rejecting the historic "iron doc" culture by encouraging physicians to extend to themselves and their colleagues the same natural compassion that they show to their patients. Leaders should *expect* physicians to attend to their own well-being and should view self-care as a professional core competency, abandoning the antiquated and dangerous misconception that self-care and patient care are competing interests.

It is essential to build a culture of appreciation, support, and compassion along with a deep sense of community. For example, peer support programs that train clinicians to provide emotional

support to colleagues may be effective ways to prevent harmful stress while contributing to a culture of compassion and a sense of community. Medical teams also can reduce harmful stress by ensuring that all team members feel safe when pointing out problems, rather than fearing retaliation or other negative reactions from colleagues or superiors.

A culture of wellness also exerts a reciprocal effect on the other two domains, as physicians who feel supported by their organizations tend to contribute more to improvement efforts that increase the efficiency of their practices. They are also more likely to attend to their own personal resilience when they are embedded in a culture that values and encourages this behavior.

Personal Resilience

Personal resilience is defined as the set of individual skills, behaviors, and attitudes that contribute to personal physical, emotional, and social well-being — including the prevention of burnout. It is vitally important, in our inherently stressful profession, that physicians internalize a professional duty to pursue these healthy personal behaviors. Messages linking physician wellness to clinical care outcomes may be critically important to attenuate medical culture norms that characterize self-care as selfish. When cultural norms support self-care and clinical practice efficiency allows sufficient time margins for self-care, physicians are likely to strengthen their own personal resilience.

When cultural norms support self-care and clinical practice efficiency allows sufficient time margins for self-care, physicians are likely to strengthen their own personal resilience."

There are numerous strategies that physicians can use to improve their resilience. For example, optimal nutrition, exercise, and sleep not only reduce the risk of burnout and improve general well-being but also have the potential to improve cognitive performance. Engaging in mindfulness-based stress reduction and compassion cultivation are also promising approaches to enhance personal resilience. Organizational strategies to promote personal resilience-enhancing behaviors include limiting work hours (for physician trainees and other busy clinicians), providing convenient access to low-cost or free healthy food, providing on-site exercise facilities, and providing convenient places to take a nap (or relax or meditate) during on-call, overnight, or long-shift responsibilities.

Personal resilience exerts a reciprocal effect on the other two domains because healthy physicians are better contributors to their organization's culture of wellness. They tend to "preach what they practice," meaning that they are more likely to encourage positive health behaviors in colleagues (as well as patients) when they are engaged in these behaviors themselves. They are also more capable of embracing their vital role in improving their care processes to enhance efficiency of practice for themselves and their colleagues.

A Balanced Approach to Physician Well-Being

It is increasingly clear that the growing threat to physicians' well-being directly threatens the quality of the care that they deliver as well as the health and effectiveness of the organizations in which they practice. Thus, it is highly appropriate that health care organizations are beginning to take responsibility for developing programs to address the crisis of physician burnout, and this research is rapidly expanding. We need comprehensive, systematic, and sustained efforts to improve physician well-being. These efforts will be most effective when they address drivers of physician well-being from each of the three reciprocally related domains of practice efficiency, a culture of wellness, and personal resilience. A balanced approach is necessary to build a stable platform that will drive sustained improvements in physician well-being and the performance of our health care systems. All of us who work in health care owe it to ourselves, to our patients, and to the next generation to work together to improve our practices, our culture, and ourselves.

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V. Johnson

As a physician who went from academics to private practice, to employment and now back to private practice, this article misses one unifying issue. Respect. In private practice I am in charge of my practice efficiency, can hire and fire who I need and work on system changes day to day. I can incorporate wellness and resilience in my environment for myself because I am empowered to do so - I create schedules that work for me and take time off when I need to. We personalize the staff to meet the needs of the physician, who in turn is able to take better care of themselves, patients and staff. Employed models take the focus off of the doctor part of the doctor-patient relationship, taking away control, and rarely show doctors respect. This is why burnout is on the rise, coupled with the burdens of EMR and the regulatory environment. Your article is old news to any physician who has run their own practice. The loss of control and dignity kills morale along with the three principles you describe above. The administrative culture needs to be changed with this in mind, as it is often abusive. I don't need more resilience - I need to be treated with compassion, supported and respected for who I am and what I do, and not be seen as only a RVU generator. Physicians often know what needs to change for better care delivery and wellness for all involved, and very much want to make this happen, but few are interested in listening.

April 30, 2017 at 11:00 pm **REPLY**

Dr Boland

Greetings
Excellent article.
Preventive medicine must become a priority over purely curative medicine. Mind body control is critical. See the Fifteen Second program on my website www.crelearning.com. It needs to be promoted for all health care by Stanford University.

Finally ...
.....How can you leading doctors in USA continue to fail with prevention OBESITY?..... A key priority for you now?

Please ask.

Kindest
Bob

May 04, 2017 at 3:28 am

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Appendix C

MAYO CLINIC

SPECIAL ARTICLE

Executive Leadership and Physician Well-being: Nine Organizational Strategies to Promote Engagement and Reduce Burnout

Tait D. Shanafelt, MD, and John H. Noseworthy, MD, CEO

Abstract

These are challenging times for health care executives. The health care field is experiencing unprecedented changes that threaten the survival of many health care organizations. To successfully navigate these challenges, health care executives need committed and productive physicians working in collaboration with organization leaders. Unfortunately, national studies suggest that at least 50% of US physicians are experiencing professional burnout, indicating that most executives face this challenge with a disillusioned physician workforce. Burnout is a syndrome characterized by exhaustion, cynicism, and reduced effectiveness. Physician burnout has been shown to influence quality of care, patient safety, physician turnover, and patient satisfaction. Although burnout is a system issue, most institutions operate under the erroneous framework that burnout and professional satisfaction are solely the responsibility of the individual physician. Engagement is the positive antithesis of burnout and is characterized by vigor, dedication, and absorption in work. There is a strong business case for organizations to invest in efforts to reduce physician burnout and promote engagement. Herein, we summarize 9 organizational strategies to promote physician engagement and describe how we have operationalized some of these approaches at Mayo Clinic. Our experience demonstrates that deliberate, sustained, and comprehensive efforts by the organization to reduce burnout and promote engagement can make a difference. Many effective interventions are relatively inexpensive, and small investments can have a large impact. Leadership and sustained attention from the highest level of the organization are the keys to making progress.

 ■ Mayo Clin Proc. 2017;92(1):129-146

THE CHALLENGE FACING HEALTH CARE EXECUTIVES

This is a challenging time for health care executives. Increasing price competition, narrowing of insurance networks, and a greater proportion of patients with noncommercial insurance (eg, Medicare, Medicaid) due to the Affordable Care Act have all resulted in declining reimbursements. In parallel, requirements for "meaningful use" of electronic health records have resulted in large capital expenditures and dramatically increased clerical burden for staff.[1,2] These financial challenges have, by and large, been addressed by increasing productivity expectations for physicians (ie, caring for more patients with the same amount of time/resources), efforts to improve efficiency, and expense reductions to decrease the cost of care delivered (doing more with less).

Health care organizations are also facing a variety of other threats. Increased mergers and consolidation of competitors place contracting at risk and are a perpetual, existential threat to organizational survival.[3] The implementation of new quality metrics and requirements for public reporting necessitates greater attention to measures of system safety and increased resources to count, track, and report these dimensions. The national shortage of nurses and physicians in many specialties makes it challenging to maintain adequate staffing.[4,5] Assessment of patient satisfaction and ubiquitous ratings of hospital "quality" creates incessant pressure to keep up with competitors in the technological "arms race" and to invest resources to maintain a state-of-the-art physical plant. Attacks from cyber criminals and nation states are a constant threat to information security as well as the trust of patients and the public.

From the Director of the Program on Physician Well-being (T.D.S.) and President and Chief Executive Officer (J.H.N.), Mayo Clinic, Rochester, MN.

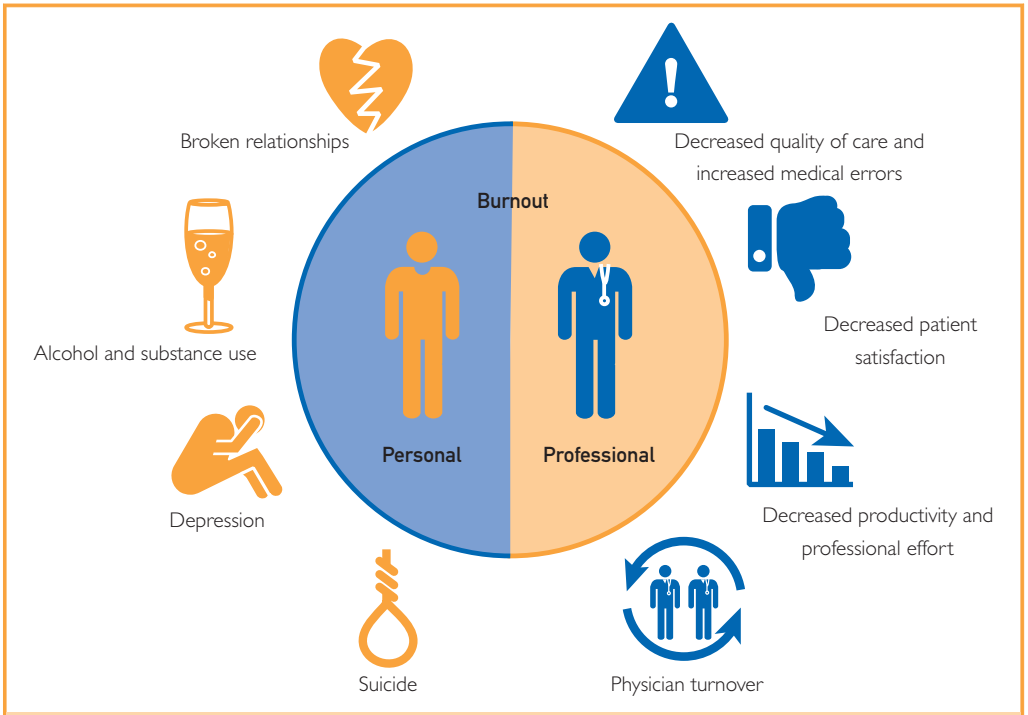

FIGURE 1. Personal and professional repercussions of physician burnout.

These myriad challenges often lead health care executives to focus on external threats. This can create a blind spot to equally important internal threats to organizational health. Successfully navigating the external challenges requires not only tremendous leadership but also committed and productive physicians working in partnership with leaders (who may or may not be physicians themselves). Executives need their physicians to be engaged, nimble, resilient, and invested in helping the organization improve quality, develop more efficient care delivery models, and enhance productivity.[6]

Unfortunately, today's health care leaders face these challenges with an increasingly exhausted and disillusioned physician workforce. National studies indicate that at least 50% of US physicians are experiencing professional burnout.[7,8] Burnout is a syndrome characterized by exhaustion, cynicism, and reduced effectiveness.[9] Burnout in US physicians has increased during the past decade and is dramatically higher than that of US workers in other fields.[7,8] The rate of burnout among physicians varies by clinical discipline, with many of the specialties at the front line of access to care (eg, family medicine, general internal medicine, and emergency medicine) at highest risk.[7] Although burnout can also affect nurses and other health care workers, the focus of this manuscript is the epidemic of burnout among US physicians.

IMPLICATIONS OF PHYSICIAN BURNOUT

There is a moral and ethical imperative to address burnout in physicians. Physician burnout contributes to broken relationships, alcoholism, and physician suicide.[10-16] In addition to the moral-ethical argument, there is a strong professional and business case to reduce physician burnout and promote physician engagement. Studies indicate that physician burnout influences quality of care, patient safety, and patient satisfaction.[17-24] Physician distress has also been linked to physician prescribing habits, test ordering, the risk of malpractice suits, and whether or not patients adhere with physicians' medical recommendations (Figure 1).[11,25-28] Based on these relationships, it has been argued that physician distress is an important quality indicator for medical centers to monitor.[29]

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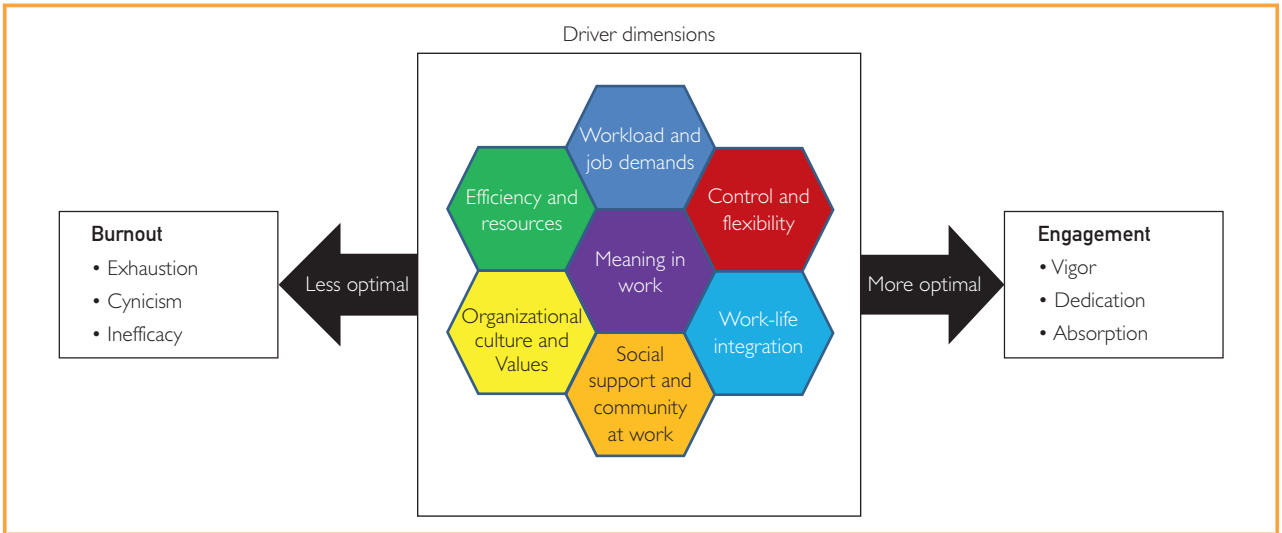

FIGURE 2. Key drivers of burnout and engagement in physicians.

Burnout also has strong links to physician turnover and professional work effort.[30-34] The costs of replacing a physician (recruitment, onboarding, and lost patient care revenue during recruitment, relocation, and ramp up) are estimated to be 2 to 3 times the physician's annual salary.[35-38] Even if physicians do not leave, burnout can have a potentially large effect on productivity. In a prospective longitudinal study of approximately 2000 physicians at Mayo Clinic, each 1-point increase in burnout (on a 7-point scale) or 1-point decrease in satisfaction (on a 5-point scale) was associated with a 30% to 40% increase in the likelihood that physicians would reduce their professional work effort during the next 24 months based on independent correlation with payroll records.[39]

A SHARED RESPONSIBILITY

Given the professional repercussions of physician satisfaction and burnout, health care organizations have a vested interest in cultivating physician engagement. Engagement is the positive antithesis of burnout and is characterized by vigor, dedication, and absorption in work.[40,41] Any health care organization that recognized it had a system issue that threatened quality of care, eroded patient satisfaction, and limited access to care would rapidly mobilize organizational resources to address the problem. Burnout is precisely such a system issue.[30,41] Extensive evidence suggests that the organization and practice environment play critical roles in whether physicians remain engaged or burn out (Figure 2). Although a host of factors can contribute to burnout and engagement, these can largely be grouped into 7 dimensions: workload, efficiency, flexibility/control over work, work-life integration, alignment of individual and organizational values, social support/community at work, and the degree of meaning derived from work.[39,42,43] Each of these dimensions is influenced by individual, work unit, organizational, and national factors (Figure 3).[39] Given this fact, reducing burnout and promoting engagement are the shared responsibility of individual physicians and health care organizations.[30,44,45]

Mistakenly,[46,47] most hospitals, medical centers, and practice groups operate under the framework that burnout and professional satisfaction are solely the responsibility of the individual physician. This frequently results in organizations pursuing a narrow list of "solutions" that are unlikely to result in meaningful progress (eg, stress management workshops and individual training in mindfulness/resilience). Such strategies neglect the organizational factors that are the primary drivers of physician burnout and are correctly viewed with skepticism by physicians as an insincere effort by the organization to address the

Drivers of burnout and engagement in physicians	 Individual factors	 Work unit factors	 Organization factors	 National factors
Workload and job demands	• Specialty • Practice location • Decision to increase work to increase income	• Productivity expectations • Team structure • Efficiency • Use of allied health professionals	• Productivity targets • Method of compensation - Salary - Productivity based • Payer mix	• Structure reimbursement - Medicare/Medicaid - Bundled payments - Documentation requirements
Efficiency and resources	• Experience • Ability to prioritize • Personal efficiency • Organizational skills • Willingness to delegate • Ability to say "no"	• Availability of support staff and their experience • Patient check-in efficiency/process • Use of scribes • Team huddles • Use of allied health professionals	• Integration of care • Use of patient portal • Institutional efficiency: - EHR - Appointment system - Ordering systems • How regulations interpreted and applied	• Integration of care • Requirements for: - Electronic prescribing - Medication reconciliation - Meaningful use of EHR • Certification agency facility regulations (JCAHO) • Precertifications for tests/treatments
Meaning in work	• Self-awareness of most personally meaningful aspect of work • Ability to shape career to focus on interests • Doctor–patient relationships • Personal recognition of positive events at work	• Match of work to talents and interests of individuals • Opportunities for involvement - Education - Research - Leadership	• Organizational culture • Practice environment • Opportunities for professional development	• Evolving supervisory role of physicians (potentially less direct patient contact) • Reduced funding - Research - Education • Regulations that increase clerical work
Culture and values	• Personal values • Professional values • Level of altruism • Moral compass/ethics • Commitment to organization	• Behavior of work unit leader • Work unit norms and expectations • Equity/fairness	• Organization's mission - Service/quality vs profit • Organization's values • Behavior of senior leaders • Communication/ messaging • Organizational norms and expectations • Just culture	• System of coverage for uninsured • Structure reimbursement - What is rewarded • Regulations
Control and flexibility	• Personality • Assertiveness • Intentionality	• Degree of flexibility: - Control of physician calendars - Clinic start/end times - Vacation scheduling - Call schedule	• Scheduling system • Policies • Affiliations that restrict referrals • Rigid application practice guidelines	• Precertifications for tests/ treatments • Insurance networks that restrict referrals • Practice guidelines
Social support and community at work	• Personality traits • Length of service • Relationship-building skills	• Collegiality in practice environment • Physical configuration of work unit space • Social gatherings to promote community • Team structure	• Collegiality across the organization • Physician lounge • Strategies to build community • Social gatherings	• Support and community created by Medical/specialty societies
Work-life integration	• Priorities and values • Personal characteristics - Spouse/partner - Children/dependents - Health issues	• Call schedule • Structure night/weekend coverage • Cross-coverage for time away • Expectations/role models	• Vacation policies • Sick/medical leave • Policies - Part-time work - Flexible scheduling • Expectations/role models	• Requirements for: - Maintenance certification - Licensing • Regulations that increase clerical work

FIGURE 3. Drivers of burnout and engagement with examples of individual, work unit, organization, and national factors that influence each driver. EHR = electronic health record; JCAHO = Joint Commission on the Accreditation of Healthcare Organizations. Adapted from *Mayo Clin Proc.*[39]

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problem. Casting the issue as a personal problem can also lead individual physicians to pursue solutions that are personally beneficial but detrimental to the organization and society, such as reducing professional work effort or pursuing a concierge practice model. The fact that more than 50% of US physicians are now burned out underscores the need for a system-level strategy.[8,44,48,49] Herein we focus on organization-level strategies to reduce burnout and promote engagement.

NINE ORGANIZATIONAL STRATEGIES TO PROMOTE PHYSICIAN WELL-BEING

Although the framework of shared responsibility and the need for system-level solutions have begun to be recognized, 2 pervasive myths have been barriers to organizations taking effective action. The first is the belief that the steps necessary to cultivate physician well-being will conflict with other organizational objectives. The second is the assumption that all effective interventions to reduce burnout will be cost prohibitive. The reality is that an engaged physician workforce is requisite to achieving institutional objectives, that small investments can have a large impact, and that many effective interventions are cost neutral. Herein, we summarize 9 organizational strategies to promote physician well-being and highlight how we have operationalized some of these approaches at Mayo Clinic. We do not consider these principles to be exhaustive or definitive. Rather, they represent tangible organizational actions that are supported by evidence and experience.

Strategy 1: Acknowledge and Assess the Problem

Acknowledging the problem of burnout and demonstrating that the organization cares about the well-being of its physicians is a necessary first step toward making progress. We have been impressed by how much our staff appreciate open and candid dialogue directly with the chief executive officer (CEO) about the challenge of being a physician in today's world. It is important that these discussions are not rushed and are repeated more often than one initially imagines would be necessary. Depending on the size of the organization, a variety of formats is typically necessary to reach the staff. At Mayo Clinic, we have incorporated town halls, radio broadcasts, letters, and video interviews along with face-to-face meetings involving clinical divisions, work units, and small groups as formats for the CEO to reach the staff. Naming the issue and being willing to listen demonstrates that the problem is recognized at the highest level of the organization and creates the necessary trust for physicians and leaders to work in partnership to make progress.

Once the problem is acknowledged, it is necessary to measure physician well-being as a routine institutional performance metric.[29,49,50] Organizations measure the things that they believe are critical to achieving their mission. All medical organizations routinely assess patient volume, payer mix, quality/safety, patient satisfaction, and financial performance (cost, net operating income, etc). Overwhelming evidence indicates that physician well-being is equally important to the health and long-term viability of the organization, and, thus, it should be measured.

There are a variety of dimensions of physician well-being worthy of assessment, including: burnout, engagement, professional fulfillment/satisfaction, fatigue, emotional health/stress, and various dimensions of well-being/quality of life (Table). Organizations should select and assess several of these dimensions at regular intervals. Ideally, standardized instruments shown to correlate with outcomes of interest (eg, safety, quality, productivity, and turnover) should be used.[9,31,39,54,55,65,66] Using instruments with national benchmark data can also help provide context for interpreting results.[7-9,51,65,66] Tools that are applicable to other health professionals (eg, nurses) and other job types also allows comprehensive assessment of the organization rather than assessment of physician alone. At Mayo Clinic, we first began measuring the professional satisfaction of physicians (as well as our 60,000 other employees) in 1998, and we began systematically measuring burnout using standardized instruments in 2010. We also regularly measure engagement and satisfaction with work-life integration. Historically, we assessed these dimensions every 24 months, but we switched to annual assessment in 2016. We benchmark these measures against national data[8] and use the information as a barometer of

TABLE. Candidate Dimensions of Well-being for Organizations to Assess

Dimension	Potential standardized instruments to assess	No. of questions	National benchmarks for US physicians	Comparisons with the general population	Relevant to other health care workers[a]	Shown to correlate with relevant outcomes[b]	Select references
Achievement/professional fulfillment							
• Meaning	Physician Job Satisfaction Scale	5 or 36	Yes[c]	–	No	Yes	20,31,43,51
• Professional satisfaction	Empowerment at Work Scale	12	–	–	Yes	–	52,53
Burnout							
• Exhaustion	Maslach Burnout Inventory	2 or 22	Yes	Yes	Yes	Yes	7-10,22,39,54,55
• Cynicism	Oldenburg Burnout Inventory	16	–	–	Yes	–	47,56
• Inefficacy							
Engagement							
• Vigor	Utrecht Work Engagement Scale	9	–	–	Yes	–	57
• Dedication							
• Absorption							
Fatigue							
• Energy	Brief Fatigue Index	9	–	–	Yes	–	58
• Sleep	Epworth Sleepiness Scale	8	–	–	Yes	–	59
Stress							
• Work stress	Perceived Stress Scale	10	–	Yes	Yes	–	60,61
• Anxiety							
Quality of Life							
• Physical	Short Form Health Survey (SF)-8/SF-12/SF-36	8 or 12 or 36	–	Yes	Yes	–	62,63
• Mental	Linear Analogue Self-Assessment Scales	1-10	–	–	Yes	–	64
• Emotional							
• Social							
• Financial							
• Overall							
Composite well-being measures							
• Achievement/professional fulfillment	Well-being Index/Physician Well-being Index[d]	9	Yes[e]	Yes	Yes	Yes	65-67
	Mini-Z[f]	16	–	–	No	–	68
• Burnout							
• Work-life integration							
• Stress							
• Fatigue							

[a]Can be used in nurses and other health care professionals (eg, applied at the medical center, hospital, or system level).
[b]Relevant outcomes include quality of care, patient satisfaction, turnover, professional work effort, and suicide.
[c]Most recently 1999.
[d]Evaluates dimensions of meaning in work, burnout, stress, work-life integration, fatigue, mental/emotional quality of life, and physical quality of life.
[e]Most recently 2014.
[f]Evaluates dimensions of professional satisfaction, burnout, and stress.

organizational health. The results are reported directly to the Mayo Clinic Board of Governors and Board of Trustees along with other key organizational performance metrics.

Although anonymous at the level of the individual, results are aggregated at the work unit level (eg, division/department) to allow executive leadership to focus attention and resources where they are most needed. Assessing these dimensions also allows us to evaluate their relationship with other key measures of organizational performance (financial metrics, safety/quality, physician turnover, and patient satisfaction).[39]

Strategy 2: Harness the Power of Leadership

Although the importance of leadership for organizational success is obvious, its direct effect on the professional satisfaction of individual physicians is underappreciated. Recent evidence suggests that the leadership behaviors of the physician supervisor play a critical role in the well-being of the physicians they lead.[20,69] A 2013 study of more than 2800 physicians at Mayo Clinic found that each 1-point increase in the leadership score (60-point scale) of a physician's immediate supervisor (division/department chair) was associated with a 3.3% decrease in the likelihood of burnout ($P < .001$) and a 9.0% increase in satisfaction ($P < .001$) for individual physicians after adjusting for age, sex, and specialty.[69] After adjusting for other factors, 11% of the variation in burnout and 47% of the variation in satisfaction between work units was explained by the aggregate leadership rating of the work unit supervisor as assessed by their physician reports.

Harnessing the power of effective leadership to promote individual and organizational health requires several steps. First, the right leaders must be selected. This selection should focus on identifying individuals with the ability to listen to, engage, develop, and lead physicians.[70] Second, these individuals must themselves be developed, prepared, and equipped for their leadership role.[71,72] Several experts have characterized the core competencies for physician leaders,[70,73-77] and progressive institutions have developed formal strategies to identify, develop, and equip physician leaders.[70,73,74,78-81] Third, the performance of leaders should be regularly assessed by the individuals they lead. Although this seems intuitive, the leaders of many health care organizations are assessed solely based on whether they deliver on organizational performance targets. We believe that leaders must be assessed based on whether they achieve such targets as well as the way in which they do so (as evaluated by the people they are leading). Our physicians now evaluate the leadership behaviors of their immediate supervisors annually using the scale in the Supplemental Table which has been shown to correlate with burnout and satisfaction within the work-unit (available online at http://www.mayoclinicproceedings.org). This information is used for leaders' yearly performance review with executive management.

To be effective, leaders must also recognize the unique talents of the individual physicians on their team and know what motivates them.[82] Evidence suggests that physicians who spend at least 20% of their professional effort focused on the dimension of work they find most meaningful are at dramatically lower risk for burnout.[83] Although each 1% reduction below this threshold increases the risk of burnout, there is a ceiling effect to this benefit at 20% (eg, spending 50% of your time in the most meaningful area is associated with similar rates of burnout as 20%).[83] This suggests that physicians will spend 80% of their time doing what leadership needs them to do provided that they are spending at least 20% of their time in the professional activity that motivates them. This activity could involve caring for specific types of patients (eg, the underserved) or patients with a given health condition (eg, becoming a disease expert) or activities such as patient education, quality improvement work, community outreach, mentorship, teaching students/residents, or leadership/administration. To harness this principle, leaders must know what that 20% activity is for each of their physicians so that they can facilitate professional development in that dimension and identify opportunities that may allow the individual to increase the time they devote to this activity. In our experience, few leaders seek such information. Furthermore, we find that few physicians can articulate in a granular way

which professional activity is most meaningful to them when first asked. This represents a missed opportunity for individual physicians and leaders to work together to foster engagement, professional development, and professional fulfillment.

Organizations must also have the courage to make leadership changes when necessary. In most organizations, a leader who consistently underperforms on financial metrics will be removed from leadership. In the same way, leaders who continue to receive low leadership behavior scores from those they lead despite appropriate support, coaching, and mentorship may be ill-suited to lead physicians, and a leadership change may be required.

Strategy 3: Develop and Implement Targeted Interventions

Although the drivers of burnout have been defined (Figure 2), the specific way in which they manifest and which dimension is dominant varies by specialty and work unit. For example, inefficiency in the practice environment (including clerical burden) is a universal driver of dissatisfaction and burnout, but how it manifests and the specific factors that create inefficiency vary widely among surgical, primary care, radiology, and pathology work units (and among organizations).[84-90] Although general principles can be established (eg, we aim to minimize clerical burden and maximize physician efficiency), this variability makes it challenging for executive leaders to effectively address burnout at the enterprise level. Many of the challenges and solutions are local.[91]

Using the framework of the existing organizational structure in combination with strategy 1 (assessment) and strategy 2 (leadership) can overcome this dilemma.[6] Information on the prevalence of burnout, engagement, and satisfaction at the division/department level (strategy 1) allows senior leaders to identify "high-opportunity work units." At Mayo Clinic, rather than identifying high-opportunity work units using relative criteria (eg, the lowest-scoring 10% of work units on well-being—related metrics at our institution), we categorize units as high-opportunity based on external benchmarks.[8] For example, in 2013 we designated divisions/departments with burnout rates higher than the national average[7] and satisfaction below the 50th percentile relative to other US organizations as high-opportunity work units.[6] Once identified, we systematically engaged these units to identify local factors that could be rapidly altered to improve physician burnout and satisfaction.[6] This interaction was based on the principle of participatory management, collaborative action planning, and understanding how the drivers of burnout were manifest locally. The framework of the intervention is described in Figure 4. This process can also be used to drive improvement in work units that do not meet the criteria of being a high-opportunity unit. The process is structured to transition away from generalities regarding burnout, focus on the specific issue(s) in the local work unit, and identify, develop, and implement an initial intervention. This approach helps transform physicians' mindset from that of a victim in a broken system to an engaged and empowered partner working constructively with leaders to shape their own future.

Among the 7 Mayo Clinic work units with analyzable data that went through this process after the 2013 survey, all 7 had an improvement in burnout (median change 11% absolute reduction in burnout; range 4%-46% reduction), and 5 also had an improvement in satisfaction (median change 8% absolute improvement).[6] Notably, at the conclusion of the intervention, 6 of these 7 work units no longer met the criteria initially used to identify high-opportunity work units.

Because our criteria to identify high-opportunity units are based on external benchmarks, it is theoretically possible to have no work units qualify as high opportunity. This characteristic avoids the possibility that a unit moves out of the high-opportunity category simply because other units got worse. We have used these qualities to set measurable institutional objectives. Given its vital importance to organizational health, one of us (J.H.N.) has incorporated goals related to these parameters into the annual CEO performance scorecard evaluated by the Mayo Clinic Board of Trustees. Specifically, this goal is to have at least 50% of high-opportunity work units improve to the extent that they no longer qualify as high-opportunity units within 12 months. Achieving this goal means that a

Mayo Clin Proc. ■ January 2017;92(1):129-146 ■ http://dx.doi.org/10.1016/j.mayocp.2016.10.004
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Assemble Team

- *Identify* a leadership consulting team of 2-3 physicians and administrators with expertise in leadership and physician engagement.[a]

Team Meets with Work Unit Leaders

- Get insights regarding the specific local challenges from the perspective of local leadership team.

Focus Groups

- Team subsequently conducts 2-3 focus groups (60 min each) with physicians (n=7-8) in the work unit.
- Introduction: *"We are here because…"*
- Provide framework for discussion by briefly (2 min) articulating the drivers of burnout/engagement (Figure 2).
- Ask individuals to succinctly articulate the macro factors that are larger than the work unit contributing to this challenge (EHR, reimbursement issues, etc). State that these comments will be recorded and collated with comments from other units for senior leaders to consider. Most of these challenges (eg, improving the EHR) are not easily solved, and limited time (<5 min) should be spent on this aspect of the discussion. The goal is to acknowledge these challenges/issues that are beyond the control of the work unit and for the consulting team to share them with the higher-level leaders in the organization responsible for these aspects.
- The remaining 50 min should focus on identifying specific, local challenges and solutions. Ask which of the 7 driver dimensions (Figure 2) is viewed as the most pressing challenge in the work unit (eg, inefficiency due to excessive clerical burden). Have participants articulate specific ways this manifests (eg, *there is no triage or filtering of messages received through the patient portal; the operating room turnaround times are too slow*). Let this be granular.
- Once the driver dimension of greatest current concern is identified, ask "What changes could be made to address this problem rapidly if your work unit and its leaders made it a priority?" Obvious solutions that involve changes to process and more effective use of support staff are often identified with good facilitation. Simplistic solutions (eg, *"we need to hire 10 more nurses"*) should be both acknowledged and challenged (eg, *"That may be worth pursing but that takes time and requires development of the business case. Are there ways we could harness the existing support staff to provide this support more quickly? Are there other ways to make progress in the near term while permission to increase support staff is pursued? What could we do to make our lives better in the next 2-3 mo?*)."

Passing the Baton Back to the Work Unit Leader

- Consulting team debriefs the local work unit leader regarding the 1-2 dimensions of greatest concern identified during the focus groups. Highlight the dimension of greatest concern (eg, inefficiency due to excess clerical burden) and give examples of how it manifests. Provide examples of the types of local changes the groups felt would be most helpful.
- Charge to the local work unit leader: empower your team to develop and implement one change designed to make progress in this dimension. The consulting team should emphasize to the local work unit leader that it is critical that the specific change to be implemented is selected and developed by the physicians in the unit (not the local work unit leader and their leadership team).

Work Unit Leader Facilitates the Change

- Local work unit leader leads remaining aspects of the process. This establishes that the local work unit leader is spearheading the changes necessary to improve the unit. The leadership consulting team's job transitions to coaching and supporting the local work unit leader (behind the scenes).
- Local work unit leader meets with work unit members. Thanks them for their participation and feedback in focus groups; articulates that, although there are multiple challenges, the consensus from the focus groups was to start by trying to improve dimension *x*. Name the person they have asked to lead the task force that will go deeper to help develop and implement a change intended to make an improvement in this dimension over the next 8-10 wk.
- Local work unit leader empowers task force (with appropriate guardrails) to develop and help operationalize the idea developed by the group.

Typical Outcomes

- Once the change is implemented, assess the impact. Did the change help? Are revisions/refinements needed?
- Even if the intervention did not lead to the hoped for improvement, the process itself may nonetheless reduce burnout and promote engagement. The change made was derived from the input and idea(s) of the work unit members; they were empowered to develop and try it. They can now move forward and try something else.
- Move on to the next dimension for improvement and repeat the process.

FIGURE 4. A stepwise process for targeted work unit interventions. [a]This process can also be applied to other units that do not meet the high-opportunity criteria, and, in such cases, it may be possible for some steps performed by the consulting team to be performed by work unit leaders. EHR = electronic health record.

division/department that is down will not be down for long. Using an objective external benchmark also makes it possible for the organization to try to drive down the total number of high-opportunity work units in an iterative manner over time (eg, reduce the number of high-opportunity work units by 10% every 12 months). These are strategic metrics that can be measured as a target to evaluate the performance of senior management.

Strategy 4: Cultivate Community at Work

Physicians deal with unique challenges (eg, medical errors, malpractice suits) and have a professional identity and role that is distinct from other disciplines.[11,92-94] Peer support has always been critical to helping physicians navigate these professional challenges. This support can be formal[95,96] or informal[97] and encompasses a wide range of activities, including celebrating achievements (eg, personal and professional milestones), supporting one another through challenging experiences (eg, loss of a patient, medical errors, a malpractice suit), and sharing ideas on how to navigate the ups and downs of a career in medicine.[11,22,92-94,98-100]

Historically, such interactions happened somewhat organically during the course of discussing interesting/challenging cases or spending time together in the physicians' lounge. In our experience, these interactions have been an unintended casualty of increasing productivity expectations, documentation requirements, and clerical burden. Well-intentioned efforts to create a more egalitarian environment have also led many organizations to eliminate formal spaces for physicians to interact (eg, physicians' lounge or dining room) without recognizing the important role that this dedicated space played in fostering interpersonal connections among physicians. Collectively, these changes have led to an erosion of peer support and a greater sense of isolation for many physicians.

Deliberate organizational strategies are needed to counter the forces eroding connection with colleagues.[101] Around the same time that many institutions were eliminating their physicians' lounge (eg, 2001), we introduced a dedicated meeting area with free fruit and beverages, computer stations, lunch tables, and limited food for purchase for the 2000 physicians, scientists, and senior administrators at our Rochester campus as part of an ongoing building project. The space so rapidly became an incubator for peer interaction and comradery that within 3 years we remodeled existing space to create similar rooms at a second location in Rochester as well as on our Florida and Arizona campuses.

We have also experimented with other ways to promote community at work. In 2012, a randomized trial at Mayo Clinic found that providing physicians with 1 hour of protected time every other week to meet with a small group of colleagues and discuss topics related to the experience of physicianhood improved meaning in work and reduced burnout.[102] A follow-up trial evaluated a revised format to make these COMPASS (COlleagues Meeting to Promote And Sustain Satisfaction) groups more cost-effective and scalable. Participating physicians signed up with a group of 6 to 7 colleagues, shared a meal together at a restaurant in town once every 2 weeks, and spent the first 20 minutes of that gathering discussing a question that explored the virtues and challenges of being a physician.[103] Funds to cover the cost of the meal were provided by Mayo Clinic. The randomized trial again found that these meetings with colleagues led to an improvement in both meaning in work and burnout for participants.[103] Based on this evidence, Mayo Clinic made COMPASS groups available to all 3755 Mayo Clinic physicians and scientists across our organization in October 2015. More than 1100 of our physicians and scientists joined a group in the first 10 months.

Strategy 5: Use Rewards and Incentives Wisely

People can be motivated by rewards. To harness this principle, many health care organizations have linked physicians' financial compensation to productivity.[104] In some settings, physicians' income is entirely based on productivity, and in others it is structured as a base salary with a productivity bonus.[105-107] Physicians are not salespeople. Although some variation in productivity (eg, patient volumes and relative value unit generation) can be attributed to physicians' experience, efficiency, and skill, such variation is relatively narrow. Physicians in an equally

Mayo Clin Proc. ■ January 2017;92(1):129-146 ■ http://dx.doi.org/10.1016/j.mayocp.2016.10.004
www.mayoclinicproceedings.org

efficient practice environment primarily increase productivity or revenue generation in 3 ways: (1) shortening the time spent per patient, (2) ordering more tests/procedures, or (3) working longer. The first 2 approaches may erode quality of care, and the third approach increases the risk of physician burnout and may, therefore, be self-defeating in the long run. Consistent with this notion, evidence suggests that productivity-based compensation increases the risk of physician burnout.[22,108]

To mitigate the potential negative effects of productivity-based pay, some medical centers have incorporated other dimensions (eg, patient satisfaction and quality measures) as part of the productivity-based pay formula.[107,109-112] Although incentivizing quality rather than only productivity/volume may better align with the mission of health care, the effectiveness of financial incentives in improving quality is far less clear,[113-117] can have unintended consequences,[113,117-119] and does not address the third potential problem of productivity-based physician pay: the incentive to overwork. Physicians may be particularly vulnerable to overwork due to high levels of education debt, their desire to "do everything for their patients," unhealthy role modeling by colleagues, and normalization of extreme work hours during the training process. Salaried compensation models are a way to overcome this issue.[107] Other innovative centers have begun to incorporate dimensions of self-care and well-being as part of the formula to calculate productivity-based pay, which may provide a safeguard to counter the incentive to overwork.

A final dimension of productivity-based compensation to consider is what "carrot" is used as a reward.[113,114] Rewards such as greater flexibility (which can facilitate work-life integration) or protected time to pursue personally meaningful aspects of work (eg, quality improvement work, community outreach, research, education, or mentorship) may allow more productive physicians to shape their work to create personal and professional fulfillment. In contrast, using a simple financial incentive may be less effective[112-114] and encourage overwork that erodes meaning and fuels burnout. Ultimately, there is no right or wrong model of compensation. It is important, however, to recognize the potential risks of each model, deliberately consider how they will be mitigated, and structure compensation in a way that facilitates individual and organizational health over the long-term.

Strategy 6: Align Values and Strengthen Culture

Most health care organizations have an altruistic mission statement that centers on serving patients and providing them the best possible medical care. An organization's culture, values, and principles in large part determine whether it will achieve its mission. It is critical for organizations to (1) be mindful of factors that influence culture, (2) assess ways to keep values fresh, and (3) periodically take stock of whether actions and values are aligned.

Mayo Clinic has a long-standing value proposition that "the needs of the patient come first" as well as a mature organizational culture that supports this value.[120] This culture is, in part, built on principles such as physician leadership, salaried physicians, physician-administrator partnership, a multidisciplinary approach to team-based care, "term limits" for all leaders (including the CEO), and organizational policies that cultivate long tenure and low turnover.

To facilitate honest self-appraisal, we ask our people to evaluate how well we live out our values through our all-staff survey. Although the commitment of our staff to the organization on this survey has been unwavering during the past 20 years, other aspects of this feedback are not always flattering. At the time of our 2011 staff survey, we received feedback from our physicians that they perceived erosion in the commitment of Mayo Clinic to its staff. In response, the Mayo Clinic Board of Governors commissioned a task force of physicians and scientists to identify where we had gotten off course.

During an 18-month interval, this task force engaged our physicians, scientists, and senior leaders in a dialogue designed to articulate our shared values and affirm that we were working toward a common goal. The task force initially used this input to create a working document that identified the 11 key components of our shared commitment, indicated why each component was important to both physicians

and the organization, and gave examples of how these characteristics shaped our culture. This document was then refined based on surveys and focus groups with physicians from across the entire organization. All Mayo Clinic physicians and scientists were then given the opportunity to review the final document and provide feedback on whether it captured what mattered most to them about the organization and to indicate the dimensions where we were not living up to our ideals. The approximately 2000 physicians and scientists who responded overwhelmingly endorsed (>95%) that the document captured the key components of the relationship between Mayo Clinic and our physicians and scientists. They also provided feedback indicating the 3 dimensions most needing improvement to better live up to our aspirations. The final document was subsequently endorsed by the Mayo Clinic Board of Governors, who also received the feedback on which dimensions were most in need of improvement. This process of value alignment helped affirm that 1) the organization and physicians are partners working toward a common goal, 2) provided candid feedback on where we needed to improve, and 3) created an enduring document that articulates the principles that form the foundation of the partnership between Mayo Clinic and its physicians (Supplemental Figure, available online at http://www.mayoclinicproceedings.org). This document is now used for recruitment and onboarding, as a recurring touchstone for communications, to identify areas needing improvement, and as a source of principles to guide organizational decision making.

Strategy 7: Promote Flexibility and Work-Life Integration

A host of organizational policies are linked to the drivers of burnout and can have a profound effect on physician well-being. Given their broad impact, the intended and unintended consequences of these policies must be thoughtfully considered and periodically reevaluated. Two aspects particularly important to physician well-being are policies related to flexibility and work-life integration.[121]

Physicians are nearly twice as likely to be dissatisfied with work-life integration as US workers in other fields. This problem is likely, in part, explained by differences in work hours. Approximately 45% of physicians work more than 60 hours per week compared with less than 10% of US workers in other fields.[7,8] The high work hours expected of a full-time position in medicine make it difficult for physicians to integrate their personal and professional lives. These challenges may be even more problematic for women physicians due to different cultural and societal expectations.[7,122-124]

Providing physicians with the option to adjust professional work effort (with a commensurate reduction in compensation) allows them to tailor their work hours to meet both personal and professional obligations.[39,125-130] Evidence suggests that reducing professional work hours can help individual physicians recover from burnout.[131] Depending on the specialty and the size of the organization, it may not always be possible for a physician to work less than full time. Nonetheless, organizations should seek to make this option available to the greatest extent possible. Given the large anticipated physician workforce shortage over the next 10 years,[4,5] providing the option to work less than full time may become an increasingly important strategy for recruitment and retention.

Perhaps even more important, organizations should seek to provide physicians greater flexibility in when and how they work.[39,121] Allowing physicians to start the work day earlier/later or to work longer hours on certain days of the week and shorter hours on others may allow individual physicians to meet personal responsibilities without having to reduce total work effort. This is typically preferable to the organization than having a part-time physician and can represent a win-win for both the individual and the organization. Declarative statements (eg "we have to staff the clinic on Friday" and "it is too complicated to match the work schedule of support staff") are frequently used as pretexts to close down discussion rather than being legitimate barriers. These needs can typically be easily accommodated in an equitable manner if explored and discussed as a team.

Institutions should also comprehensively examine the structure of their vacation benefits, coverage for life events (eg, birth of a child, illness/death in family), approach to

Mayo Clin Proc. ■ January 2017;92(1):129-146 ■ http://dx.doi.org/10.1016/j.mayocp.2016.10.004
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scheduling, and strategy for coverage of nights and weekends. Compensation practices that disincentivize using vacation time are shortsighted and should be eliminated.

Strategy 8: Provide Resources to Promote Resilience and Self-care

Although the primary focus for organizations should be to optimize the practice environment and create a healthy organizational culture, they should also provide resources that make it easier for physicians to implement individual strategies to prevent burnout, deal with distress, and promote well-being.[44,49,132-134] Unfortunately, most medical centers have made such individual offerings the centerpiece of their strategy. When individually focused offerings are not coupled with sincere efforts to address the system-based issues contributing to burnout, this approach is typically met with skepticism and resistance by physicians ("they are implying I am the problem"). In this context, the response to well-intentioned "resilience training" is frequently a cynical one ("you only want to make me more resilient so you can further increase my workload"). For this reason, it is important that such individual offerings are part of a broader strategy that demonstrates that the organization is also doing its part to address issues in the system and environment.

Providing individual physicians with tools for self-calibration, resources to promote self-care, and training in skills that promote resilience are 3 tangible ways that organizations can help individuals care for themselves. The available data indicate that individual physicians do not accurately calibrate their personal level of well-being/distress and suggest that providing them objective information on how their well-being compares with that of physicians nationally helps promote behavior change.[67] Linking such tools for self-calibration to resources may help physicians take action. Such resources should be comprehensive and address work-life integration, exercise/fitness, sleep habits, diet, personal financial health, relationships, hobbies, and preventive medical care.[44,50,133,135-137] Physicians who take better care of their own health have been found to provide more optimal counseling and screening practices to their patients; this suggests that encouraging these behaviors in physicians may have a double benefit.[138-140] Skills training in tasks related to resilience, positive psychology exercises, mindfulness, narrative medicine, and approaches to work-life integration should be offered.[101,134,141-143]

Strategy 9: Facilitate and Fund Organizational Science

Instituting operational efforts to reduce burnout and promote physician engagement will be the primary objective for most medical centers. Vanguard institutions, however, have the additional responsibility of developing the evidence-based strategies that these other centers will implement. The Mayo Clinic Program on Physician Well-being, founded in 2007, was launched precisely to provide such evidence. Many of the approaches outlined in strategies 1 through 8 are derived from the scientific efforts of this program during the past decade. These efforts have included developing new metrics, establishing national benchmarks, implementing practice analytics, and conducting intervention studies and randomized trials, which have resulted in

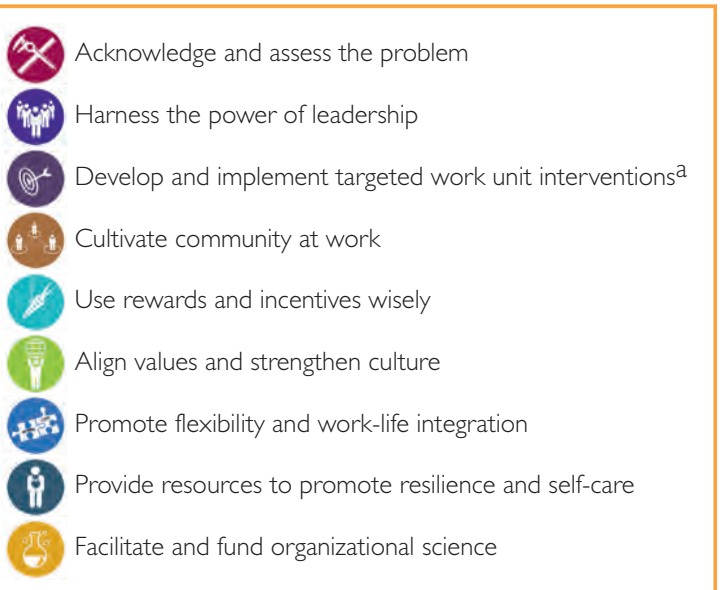

FIGURE 5. Organizational strategies to reduce burnout and promote physician engagement. [a]Often will focus on improving efficiency and reducing clerical burden but should focus on whichever driver dimension (Figure 1) deemed most important by members of the work unit (Figure 3).

approximately 100 peer-reviewed publications. Other leading institutions, such as the Stanford University School of Medicine/Medical Center, have recently made a major institutional investment in launching a similar program, and it is time for other premier institutions to follow suit. As opposed to employee assistance programs or offices/committees on physician wellness that provide support to physicians already experiencing distress, the focus of such programs is the creation of new knowledge and evidence on how to reduce burnout and promote engagement in physicians through organizational science. Given the profound effect of physician well-being on quality of care, patient satisfaction, and access to care, such knowledge will be critical to the long-term health and viability of the nation's health care delivery system.

THE MAYO CLINIC EXPERIENCE

Our experience at Mayo Clinic demonstrates that deliberate, sustained, and comprehensive efforts by the organization to reduce burnout and promote engagement can make a difference. Between 2011 and 2013, the rates of burnout among our physicians went from lower than average to similar to that of physicians nationally.[7] In response to this increase, a host of changes were pursued, including several of the strategies articulated herein (Figure 5). In the following 2 years, the absolute burnout rate of our physicians decreased by 7%, despite an 11% rise in the absolute rate of burnout in physicians nationally using identical metrics.[8] This reduction in physician burnout at Mayo Clinic was achieved while simultaneously reducing the rates of burnout in our nonphysician employees and despite having to implement a variety of other changes to improve efficiency, decrease costs, and increase productivity during the same interval. Although we are gratified that the rate of physician burnout at Mayo Clinic is currently approximately two-thirds the rate nationally (32.9% vs 48.8%),[8] burnout still affects approximately one-third of our physicians. We have more work to do.

Conclusion

Addressing the problem of physician burnout is the shared responsibility of individual physicians and the organizations in which they work. Having an engaged physician workforce is critical for health care organizations to meet institutional objectives and achieve their mission. Given the strong links to quality of care, patient safety, and patient satisfaction, there is a strong business case for organizations to reduce physician burnout and promote physician engagement. Although some factors driving burnout are larger than the organization, organizational-level efforts can have a profound effect on physician well-being. Herein, we have outlined 9 organizational strategies to reduce burnout and promote engagement along with examples of how these strategies have been operationalized at Mayo Clinic. Many effective interventions are relatively inexpensive, and small investments can have a large impact. Although the specific way each of these 9 strategies is operationalized must be adapted to fit the organization, we believe that the dimensions themselves have broad applicability. Leadership and attention from the highest level of the organization are the keys to making progress.

SUPPLEMENTAL ONLINE MATERIAL

Supplemental material can be found online at http://www.mayoclinicproceedings.org. Supplemental material attached to journal articles has not been edited, and the authors take responsibility for the accuracy of all data.

Abbreviations and Acronyms: **CEO** = chief executive officer; **COMPASS** = COlleagues Meeting to Promote And Sustain Satisfaction; **EHR** = electronic health record; **JCAHO** = Joint Commission on the Accreditation of Healthcare Organizations; **SF-8/SF-12/SF-36** = 8-/12-/36-Item Short Form Health Survey

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Appendix D

MAYO CLINIC

Impact of Organizational Leadership on Physician Burnout and Satisfaction

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Abstract

Objective: To evaluate the impact of organizational leadership on the professional satisfaction and burnout of individual physicians working for a large health care organization.

Participants and Methods: We surveyed physicians and scientists working for a large health care organization in October 2013. Validated tools were used to assess burnout. Physicians also rated the leadership qualities of their immediate supervisor in 12 specific dimensions on a 5-point Likert scale. All supervisors were themselves physicians/scientists. A composite leadership score was calculated by summing scores for the 12 individual items (range, 12-60; higher scores indicate more effective leadership).

Results: Of the 3896 physicians surveyed, 2813 (72.2%) responded. Supervisor scores in each of the 12 leadership dimensions and composite leadership score strongly correlated with the burnout and satisfaction scores of individual physicians (all $P<.001$). On multivariate analysis adjusting for age, sex, duration of employment at Mayo Clinic, and specialty, each 1-point increase in composite leadership score was associated with a 3.3% decrease in the likelihood of burnout ($P<.001$) and a 9.0% increase in the likelihood of satisfaction ($P<.001$) of the physicians supervised. The mean composite leadership rating of each division/department chair (n=128) also correlated with the prevalence of burnout (correlation=−0.330; $r^2=0.11$; $P<.001$) and satisfaction (correlation=0.684; $r^2=0.47$; $P<.001$) at the division/department level.

Conclusion: The leadership qualities of physician supervisors appear to impact the well-being and satisfaction of individual physicians working in health care organizations. These findings have important implications for the selection and training of physician leaders and provide new insights into organizational factors that affect physician well-being.

 ■ Mayo Clin Proc. 2015;90(4):432-440

For editorial comment, See page 425

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Physicians are increasingly employed by large health care organizations. Studies suggest that approximately 75% of US physicians are now employed by hospitals, academic medical centers, health maintenance organizations, and large practice groups.[1] This represents a profound structural change from the solo practitioner and small group practice models in which most physicians previously functioned.[2-4] This evolution in practice structure has created new challenges for physicians, requiring them to sacrifice some autonomy/flexibility, achieve productivity requirements set by the organization, and be accountable to organizational leadership.[5-9]

Little is known about the impact of organizational leadership on the professional satisfaction and burnout of individual physicians. Physician burnout and professional satisfaction have strategic importance to health care organizations given their well-documented effect on quality of care, attrition/turnover, and patient satisfaction.[10-20] Small studies suggest that the relationship between individual physicians and their division/department chairperson is a critical component of professional satisfaction.[21]

To better understand the impact of leadership on the degree of burnout and professional satisfaction of physicians working in large organizations, we evaluated the relationship between the leadership qualities of firstline physician supervisors and the well-being and burnout of the physicians in their work unit.

PARTICIPANTS AND METHODS

Participants

Mayo Clinic is a nonprofit, physician-led health care organization with 3 large academic campuses (Rochester, Minnesota; Scottsdale, Arizona; and

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Jacksonville, Florida) and an integrated group of community-based hospitals and health care facilities serving more than 70 communities in Iowa, Georgia, Wisconsin, and Minnesota. As part of its efforts to foster a cohesive organization, Mayo Clinic surveys its physicians, scientists, allied health staff, and all other employees approximately every 24 months. This all-staff survey is administered by an independent consulting organization (Sirota Survey Intelligence) and covers a broad array of topics, including perception of quality and safety, professional burnout, satisfaction with the organization, and assessment of the institutional culture. Each individual also provides a detailed evaluation of the leadership qualities of their immediate supervisor.

The most recent survey was administered in October 2013. The present analysis focuses on the 3896 physicians and scientists in the sample who practiced at 1 of the 3 academic campuses or 1 of the 70 facilities in the Mayo Clinic Health System. The physician version of the survey included 98 questions exploring a variety of topics, as described previously. Participation was voluntary, and all the data were confidential. Although the external survey consulting firm tracks responses by employee identification number, identifying information is not available to any Mayo Clinic employee. Permission to use data collected from the survey for the research analysis reported herein was approved by the Mayo Clinic Institutional Review Board.

Demographic Characteristics

Available demographic information included age, sex, and specialty area. All the physicians were categorized into 1 of 8 specialty areas: primary care (general internal medicine, family medicine, and general pediatrics), internal medicine subspecialty, surgical discipline, radiology, anesthesiology, pathology/laboratory medicine, other medical specialty area (eg, dermatology, neurology, physical medicine/rehabilitation, psychiatry, and radiation oncology), or other.

Burnout and Satisfaction

Burnout is a syndrome characterized by emotional exhaustion (losing your enthusiasm for work) and depersonalization (viewing/treating people as if they were objects), resulting in decreased effectiveness at work.[22] Although the 22-item Maslach Burnout Inventory (MBI)[22] is the gold standard for assessing burnout, its length (22 items) limits feasibility for use in an organization-wide survey covering a wide range of topics, such as the one reported herein. Thus, to evaluate the emotional exhaustion and depersonalization domains of burnout in physicians, we used 2 single-item measures adapted from the full MBI. These 2 items have been used in previous studies involving more than 30,000 physicians[23-26] and have been shown to have a high correlation with burnout as measured by the full MBI in samples of more than 10,000 physicians.[18,27] The area under the receiver operating characteristic curve for emotional exhaustion for the single emotional exhaustion item relative to the full MBI is 0.94.[27] The area under the receiver operating characteristic curve for depersonalization using the single depersonalization item relative to the full MBI domain is 0.93.[27] Using the published approach to categorize responders, the positive predictive values of the single items for high emotional exhaustion and depersonalization relative to the full MBI are 88.2% and 89.6%, respectively.[27] Concurrent validity of this approach for assessing burnout has also been established.[18] These 2 items remain the property of Mind Garden Inc (which holds the copyright on the MBI) and were used with the appropriate license.

Overall satisfaction with the health care organization in which participating physicians practiced was evaluated by asking, "Considering everything, how would you rate your overall satisfaction with Mayo Clinic as a whole at the present time?" Physicians responded using a 5-point Likert scale (5=very satisfied, 4=satisfied, 3=neither satisfied nor dissatisfied, 2=dissatisfied, 1=very dissatisfied).

Evaluation of Frontline Leaders in Clinical Divisions and Departments

Physicians rated the leadership qualities of their immediate supervisor (division/department chairperson) in 12 specific dimensions (Table 1). All the leaders evaluated were themselves physicians/scientists. These 12-items were devised to assess specific characteristics of leadership that are measurable and actionable (able to be improved on). For 11 of the items, physicians rated their level of agreement on a

TABLE 1. Items Evaluating Physician Opinion of the Leadership Qualities of Their Immediate Physician Supervisor

To what extent do you agree or disagree with each of the following statements about (name of immediate supervisor)?
Holds career development conversations with me[a]
Inspires me to do my best[a]
Empowers me to do my job[a]
Is interested in my opinion[a]
Encourages employees to suggest ideas for improvement[a]
Treats me with respect and dignity[a]
Provides helpful feedback and coaching on my performance[a]
Recognizes me for a job well done[a]
Keeps me informed about changes taking place at Mayo Clinic[a]
Encourages me to develop my talents and skills[a]
I would recommend working for (name of immediate supervisor)[a]
Overall, how satisfied are you with (name of immediate supervisor)[b]

[a]Response options: 5=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree, 1=strongly disagree; NA=do not know/not applicable.
[b]Response options: 5=very satisfied, 4=satisfied, 3=neither satisfied nor dissatisfied, 2=dissatisfied, 1=very dissatisfied.

5-point Likert scale (5=strongly agree, 4=agree, 3=neither agree nor disagree, 2=disagree, 1=strongly disagree; NA=do not know/not applicable). The final item asked individuals to rate their overall satisfaction with their immediate supervisor (5=very satisfied, 4=satisfied, 3=neither satisfied nor dissatisfied, 2=dissatisfied, 1=very dissatisfied). In addition to evaluating the 12 items individually, an overall leadership score was created by summing the scores for the 12 individual items into a composite leadership score (minimum score of 12, maximum score of 60; higher scores indicate more effective leadership).

Statistical Analyses

Continuous variables are summarized using mean ± SD, and categorical variables are summarized using frequency. Continuous and categorical variables were compared using *t* tests and χ^2 tests as appropriate. Two-tailed bivariate Pearson correlations were initially performed to assess relationships between leadership ratings and burnout/satisfaction. Multivariate logistic regression analysis was used to evaluate the relationship between composite leadership score and both burnout and satisfaction after adjusting for age, sex, duration of employment at Mayo Clinic, and specialty area.

In addition to evaluating the relationship between an individual physician's degree of burnout/satisfaction and supervisor ratings, we also evaluated the relationship between leadership and satisfaction/burnout at the division/department level. For this analysis, an average composite leadership score was determined for each of 128 frontline division/department chairpersons with at least 5 evaluations (median, 10; range, 5-110) based on the collective ratings of all responding physicians they supervised. The relationship between mean composite leadership score and the prevalence of burnout and satisfaction for the department as a whole was then assessed. Sensitivity analyses were conducted to investigate the impact of natural autocorrelation due to the nesting of clinicians within supervisors. For this analysis, logistic regression models were constructed with indicator variables for the supervisors to determine whether correlation within supervisors affected the results. All the analyses were performed using IBM SPSS Statistics version 20.

RESULTS

Of the 3896 physicians/scientists surveyed, 2813 (72.2%) responded (2684 physicians and 129 scientists), of whom 2540 (90.3%) were engaged in direct patient care activities. The demographic characteristics, professional characteristics, rates of burnout, and satisfaction of responders are shown in Table 2. The median age was 45 to 54 years, 71% were men, and half had been in practice for more than 10 years. No statistically significant differences were observed between responders and nonresponders with respect to age or sex. As a group, 38% of physicians reported high emotional exhaustion, 15% high depersonalization, and 40% at least 1 symptom of burnout. Collectively, 79% of physicians were either satisfied or very satisfied with the organization, 12% were neutral, and 9% were dissatisfied or very dissatisfied.

Physicians' evaluation of their firstline leader in the 12 dimensions assessed is shown in Supplemental Table 1 (available online at http://www.mayoclinicproceedings.org). All the leaders evaluated were themselves physicians/scientists (125 medical doctors/doctors of osteopathy, 2 medical physicists, and 1 psychologist). Each of the 12 leadership dimensions demonstrated a

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www.mayoclinicproceedings.org

statistically significant association with burnout and satisfaction. Mean scores in each leadership dimension by burnout and satisfaction are shown in Supplemental Table 2 (available online at http://www.mayoclinicproceedings.org). The prevalence of burnout and satisfaction in those who agreed or strongly agreed that their physician leader exhibited each quality evaluated is shown in Table 3. Correlations between dimensions are shown in Supplemental Table 3 (available online at http://www.mayoclinicproceedings.org). The relationships between composite leadership score and emotional exhaustion, depersonalization, and satisfaction are shown in Figure 1.

We next performed multivariate analysis to evaluate the relationship between composite leadership score and burnout/satisfaction after adjusting for age, sex, duration of employment at Mayo Clinic, and specialty area. In this adjusted analysis, each 1-point increase in composite leadership score (range, 12-60) was associated with a 3.3% decrease in the likelihood of burnout ($P<.001$) and a 9.0% increase in the likelihood of satisfaction ($P<.001$).

Next, we evaluated the impact of frontline leadership on burnout and satisfaction at the division/department level. For this analysis, the mean composite leadership score was calculated for each of 128 frontline division/department chairpersons based on the collective ratings of the physicians they supervised. The relationship between each division/department chairperson's average composite leadership score (mean, 49.7; range, 25.4-59.1) and the rate of burnout/satisfaction in the group of physicians they supervised is shown in Figure 2. Mean composite leader rating demonstrated a significant relationship with the rate of burnout at the division/department level (correlation=−0.330; $P<.0001$). An even stronger relationship was found between mean leadership score and rates of satisfaction (correlation=0.684; $P<.0001$). The r^2 value for the relationship between mean composite leadership score and rates of burnout and satisfaction at the division/department level were 0.11 and 0.47, respectively. No changes in the results were observed on sensitivity analysis to identify the impact of within-supervisor autocorrelations.

Finally, we evaluated the relationship between each leader's personal degree of burnout and satisfaction and the prevalence

TABLE 2. Demographic Characteristics, Burnout, and Satisfaction of the 2813 Responders

Characteristic	Responders (No. [%])
Age	
<35 y	178 (7)
35-44 y	800 (30)
45-54 y	809 (31)
55-64 y	702 (26)
≥65 y	161 (6)
Missing	163
Sex	
Female	765 (29)
Male	1885 (71)
Missing	163
Duration of employment at Mayo Clinic	
<5 y	803 (30)
6-10 y	477 (18)
11-15 y	570 (22)
>15 y	800 (30)
Missing	163
Specialty	
Primary care[a]	383 (14)
Internal medicine subspecialty	696 (25)
Surgical specialty	400 (14)
Other medical specialty[b]	572 (20)
Anesthesiology	122 (4)
Radiology	101 (4)
Pathology and laboratory medicine	125 (4)
Other	414 (15)
Burnout[c]	
High emotional exhaustion[d]	1063 (38)
High depersonalization[e]	401 (15)
Burnout[f]	1095 (40)
Missing	57
Satisfaction	
Very satisfied	947 (34)
Satisfied	1260 (46)
Neither satisfied nor dissatisfied	344 (13)
Dissatisfied	187 (7)
Very dissatisfied	12 (0)
Missing	33

[a]Family medicine, general pediatrics, general internal medicine.

[b]Neurology, dermatology, physical medicine/rehabilitation, radiation oncology, subspecialty pediatrics, psychiatry, etc.

[c]As assessed using the single-item measures for emotional exhaustion and depersonalization adapted from the full Maslach Burnout Inventory. Area under the receiver operating characteristic curves for the emotional exhaustion and depersonalization single items relative to that of their respective full Maslach Burnout Inventory domain score in previous studies were 0.94 and 0.93, respectively, and the positive predictive values of the single-item thresholds for high levels of emotional exhaustion and depersonalization were 88.2% and 89.6%, respectively.[18,27]

[d]Individuals indicating symptoms of emotional exhaustion weekly or more often have median domain scores on the full Maslach Burnout Inventory of greater than 30 and have a greater than 75% probability of having a high emotional exhaustion domain score as defined by the Maslach Burnout Inventory (≥27).

[e]Individuals indicating symptoms of depersonalization weekly or more often have median domain scores on the full Maslach Burnout Inventory of greater than 13 and have a greater than 85% probability of having a high depersonalization domain score as defined by the Maslach Burnout Inventory (≥10).

[f]High score (at least weekly) on the emotional exhaustion or depersonalization scale.

TABLE 3. Leadership Qualities of Immediate Supervisors and the Prevalence of Burnout and Satisfaction in the Physicians They Supervise

	Burnout (% [95% CI])			Satisfaction (% [95% CI])		
Leadership quality	Prevalence of those rating leader favorably	Prevalence of those rating leader unfavorably	*P* value	Prevalence of those rating leader favorably	Prevalence of those rating leader unfavorably	*P* value
Holds career development conversations with me	36 (34.1-38.4)	51 (47.5-55.2)	<.001	82 (80.2-83.5)	51 (46.6-55.1)	<.001
Inspires me to do my best	36 (33.6-37.8)	52 (48.6-56.3)	<.001	83 (81.6-84.8)	46 (42.2-50.5)	<.001
Empowers me to do my job	35 (33-37.1)	56 (52.4-60.4)	<.001	86 (84.9-87.8)	46 (41.8-50.1)	<.001
Is interested in my opinion	36 (33.7-37.9)	54 (49.6-57.5)	<.001	85 (83.4-86.5)	48 (44.1-52.5)	<.001
Encourages employees to suggest ideas for improvement	37 (34.5-38.6)	52 (48-56.4)	<.001	86 (84.9-87.8)	53 (48.7-57.1)	<.001
Treats me with respect and dignity	38 (35.6-39.5)	56 (50.7-61.9)	<.001	94 (93.1-95.1)	69 (64.7-72.5)	<.001
Provides helpful feedback and coaching on my performance	35 (33.1-37.4)	50 (46.5-53.6)	<.001	78 (76.2-79.7)	41 (37-45.4)	<.001
Recognizes me for a job well done	36 (33.9-38)	53 (48.6-56.5)	<.001	84 (82.8-85.9)	48 (43.5-51.9)	<.001
Keeps me informed about changes taking place at Mayo Clinic	37 (34.5-38.6)	53 (49-57.7)	<.001	88 (86.7-89.4)	54 (49.8-58.1)	<.001
Encourages me to develop my talents and skills	35 (33.2-37.3)	54 (50.4-58)	<.001	84 (82.1-85.3)	45 (40.4-48.8)	<.001
I would recommend working for your immediate supervisor	36 (34.1-38.2)	53 (49.3-57.6)	<.001	87 (86-88.8)	49 (44.9-53.3)	<.001
Overall, how satisfied are you with your immediate supervisor	36 (34-38.1)	53 (49-57)	<.001	87 (85.3-88.2)	47 (42.5-50.7)	<.001

of burnout and satisfaction among the physicians they supervised. No relationship was observed between the leader's level of emotional exhaustion, depersonalization, or burnout and the prevalence of burnout in their work unit (Supplemental Figure 1, available online at http://www.mayoclinicproceedings.org). A small but significant correlation was observed between the leader's personal level of satisfaction with the organization and the rate of satisfaction in their work unit (correlation=0.278; r^2=0.07; *P*=.003) (Supplemental Figure 2, available online at http://www.mayoclinicproceedings.org).

DISCUSSION

These findings demonstrate the importance of frontline leadership on the well-being and professional satisfaction of physicians working for a large health care organization. Leadership ratings demonstrated a strong association with burnout and satisfaction at the level of individual physicians after adjusting for age, sex, duration of employment at Mayo Clinic, and specialty area. At the work unit level, 11% of the variation in burnout and 47% of the variation in satisfaction with the organization was explained by the leadership rating of the division/department chairperson. This is remarkable when one considers the extent of other factors that influence satisfaction (eg, salary, workload expectations, speciality, culture, strategic direction of the organization, personality conflicts, and opportunities for professional development). In contrast, the leader's own level of burnout was not related to the prevalence of burnout in the division/department, and the leader's personal satisfaction had a much smaller correlation with satisfaction in their division/department than their leadership scores (r^2 0.07 vs 0.47).

These observations add to a growing understanding of organizational factors that impact physician well-being,[13,28-32] including the efficiency of the practice environment, the level of flexibility/autonomy provided to physicians, and workload expectations.[13,28-32] Extensive research now indicates that the well-being and professional satisfaction of physicians has a profound effect on the quality of care that physicians provide and affects patient adherence with treatment recommendations and satisfaction with medical care.[10-17] These effects on quality of care, combined with the impact of satisfaction and burnout on turnover and associated costs,[19,20,33,34] underscore the critical importance of physician satisfaction and burnout to the long-term success of health care organizations. This fact has led to greater recognition that reducing burnout and cultivating resilience/career satisfaction are the shared responsibility of physicians and the organizations in which they function.[28,29,31,32]

Although the importance of good leadership to the success of health care organizations is increasingly recognized, its direct effect on the professional satisfaction and burnout of individual physicians is poorly understood. Selecting

Mayo Clin Proc. ■ April 2015;90(4):432-440 ■ http://dx.doi.org/10.1016/j.mayocp.2015.01.012
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and developing individuals with the requisite qualities to effectively motivate, inspire, develop, and manage physicians presents unique challenges.[35] First, physicians are highly trained, have a tremendous amount of technical knowledge, often function independently, and develop an individual approach to providing patient care. The process of physician training also is designed to inculcate healthy degrees of skepticism, attention to detail, and a desire for evidence to undergird decision making, qualities that can create challenges to building consensus and implementing new ideas.[9,35,36] The deep understanding of medical practice requisite to leading and guiding the professional development of physicians often necessitates that the leaders themselves be physicians.[9,37] Physician leaders are, however, typically selected based on their clinical acumen, scientific expertise, or reputation rather than on the qualities necessary to be an effective leader.[35,36,38] These factors often combine to create a circumstance in which an individual who has not been well prepared to lead is thrust into a very challenging leadership situation.

Clearly, new strategies are needed to identify potential physician leaders and better prepare them for their future leadership role.[39,40] Vanguard institutions have recognized this problem and have pioneered programs to identify, develop, and equip physician leaders.[9,35,37,38,41-43] Currently, such programs are not widespread. Several thought leaders have delineated the key competencies for physician leaders[9,32,35,38,44,45] and have called for the introduction of leadership training in medical school and residency.[46,47]

The dimensions of effective physician leadership as evaluated by the composite leader score in our study could be summarized as follows: inform, engage, inspire, develop, and recognize. Many of the leadership qualities we evaluated in these dimensions were specific and teachable behaviors, such as keeping people informed, encouraging reports to suggest ideas for improvement, having career development conversations, providing feedback and coaching, and recognizing a job well done. The ability of physician leaders to inspire those who they are leading also cannot be underestimated in today's challenging and rapidly changing practice environment. Although inspiration can take many forms, we believe that engaging

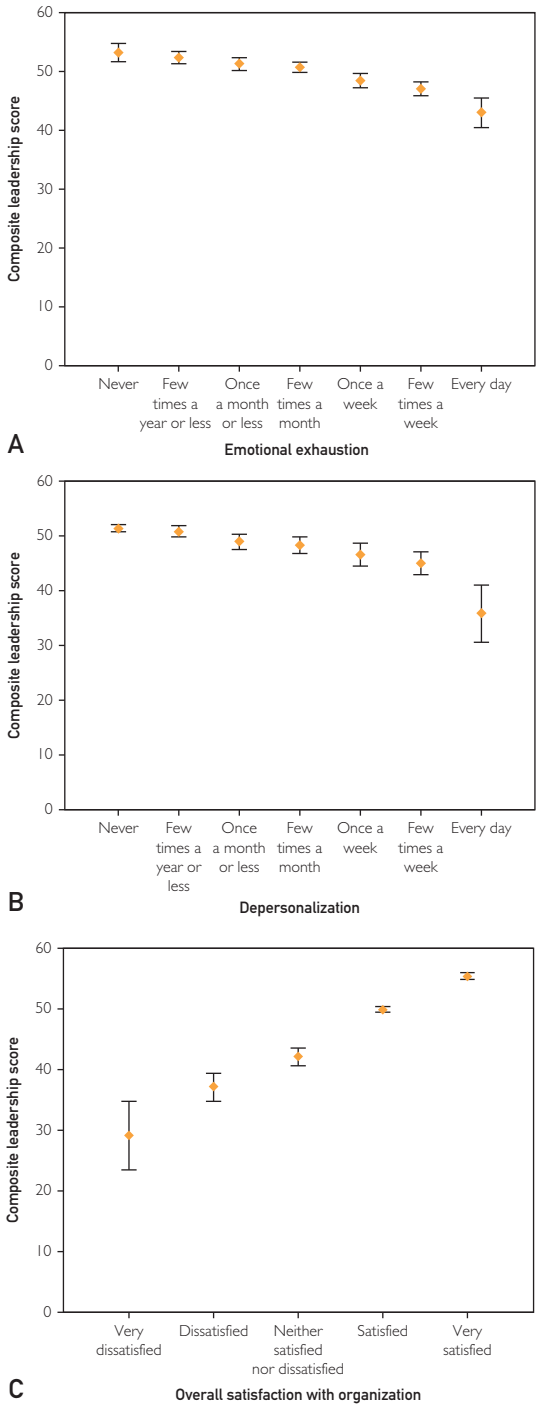

FIGURE 1. Relationships between mean composite leadership score of the immediate supervisor and physician emotional exhaustion (correlation coefficient=0.217; $P<.001$ (A), physician depersonalization (correlation coefficient=0.213; $P<.001$) (B), and physician satisfaction (correlation coefficient=0.504; $P<.001$) (C). Error bars indicate 95% CIs.

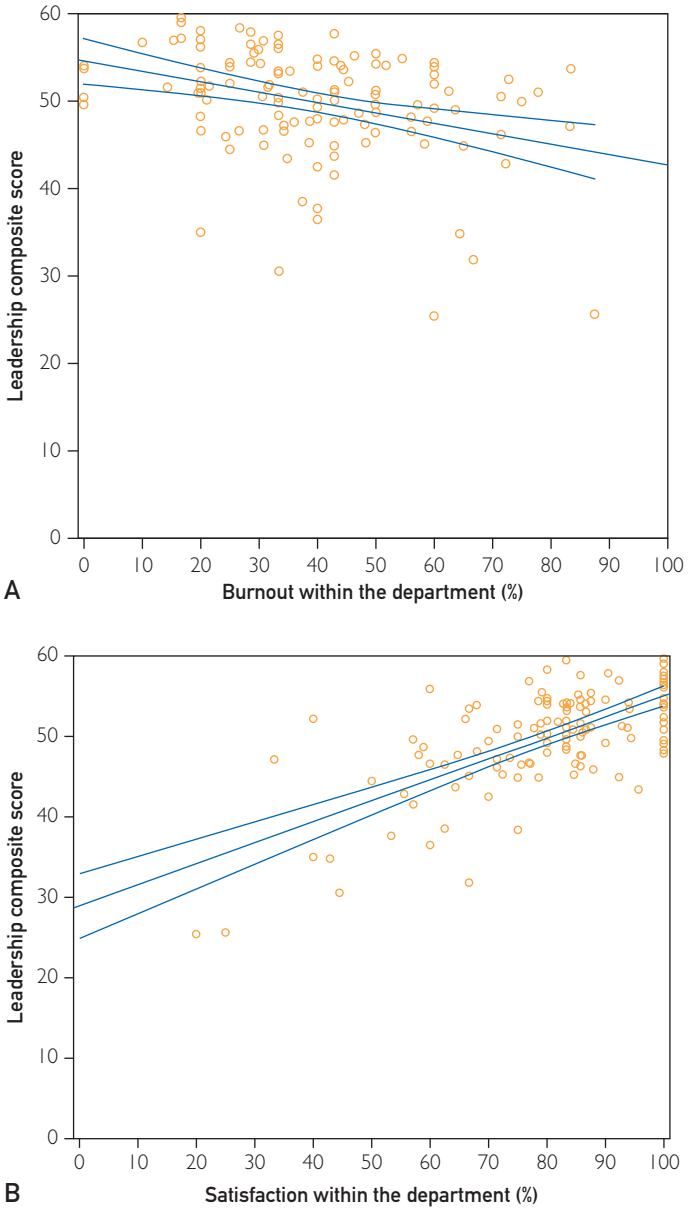

FIGURE 2. A, Mean composite leadership score and rate of burnout at the department level (correlation coefficient=−0.330; $P<.001$). B, Mean leadership composite score and rate of satisfaction at the department level (correlation coefficient=0.684; $P<.001$). Each dot represents a given division/department (n=128).

and empowering physicians to help solve the problems facing the organization and the work unit is a critical component. Physicians are inherently critical thinkers and problems solvers who want to be involved in assessing and improving their practice environment. Indeed, 3 of the 12 items in the composite score related to empowering physicians to do their work, being interested in their opinion, and encouraging suggestions for improvement. Embodying these qualities requires a leader to be secure in his or her position, unafraid to tackle difficult problems, willing to explore diverse opinions regarding new approaches, and encouraging of others to provide input in shaping solutions.

This study has several important limitations. First, it represents the experience of a single health care organization. It should be noted, however, that the findings were consistent across 3 separate academic campuses that function largely independently and across a large community-based health system. Second, the study is cross-sectional and cannot determine causality. Future longitudinal evaluations, particularly before and after leadership changes occur, will provide important additional insights. Third, it is possible that dissatisfied or burned out individuals are simply more likely to evaluate their leaders less favorably. The relationship between mean leader ratings and the prevalence of burnout and satisfaction at the work unit level, however, argues against this being the primary etiology of these findings. The fact that leadership scores at the work unit level had a much larger effect on satisfaction (r^2=0.47) than on burnout (r^2=0.11) also suggests specificity to the impact of leadership on different dimensions of physician well-being and argues against this notion. Fourth, although the 12-tem leadership assessment used is based on well-recognized leadership traits and uses a standard Likert scale, it is not a previously validated assessment.

This study also has important strengths. The study participants worked in diverse practice settings, including academic and community-based models. The sample included physicians from all specialties who were distributed in multiple regions of the country. The prevalence of burnout among participating physicians was similar to that in a recent national study.[23] The fact that all the participants were part of the same larger organization with a single culture and unified organizational strategy also has advantages as it allowed us to isolate the impact of frontline leadership on physician well-being, to explore the impact of leadership at the individual and division/department levels, and to evaluate the relationship between leaders' own

Mayo Clin Proc. ■ April 2015;90(4):432-440 ■ http://dx.doi.org/10.1016/j.mayocp.2015.01.012
www.mayoclinicproceedings.org

well-being and the well-being of those they supervise. In this regard, multicenter studies would present other limitations where differences in environment, organizational culture, and macro-level strategy could confound reliable isolation of the impact of frontline leadership on physician satisfaction. Although the cultural aspects of the institution studied may influence some of the results, the impact of frontline leaders on the well-being of the physicians they supervise is unlikely to be unique to Mayo Clinic. Additional strengths of this study include the high participation rate[48] and the use of validated metrics to assess burnout.[18,27]

CONCLUSION

The leadership qualities of physician supervisors have a direct effect on the personal well-being of the physicians they lead. These findings have important implications for the selection and training of physician leaders. The results also provide new insights into organizational factors that impact physician well-being.

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SUPPLEMENTAL ONLINE MATERIAL

Supplemental material can be found online at http://www.mayoclinicproceedings.org.

Abbreviations and Acronyms: **MBI** = Maslach Burnout Inventory; **NA** = do not know/not applicable

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Appendix E

JAMA Internal Medicine | Original Investigation | PHYSICIAN WORK ENVIRONMENT AND WELL-BEING

Controlled Interventions to Reduce Burnout in Physicians
A Systematic Review and Meta-analysis

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IMPORTANCE Burnout is prevalent in physicians and can have a negative influence on performance, career continuation, and patient care. Existing evidence does not allow clear recommendations for the management of burnout in physicians.

OBJECTIVE To evaluate the effectiveness of interventions to reduce burnout in physicians and whether different types of interventions (physician-directed or organization-directed interventions), physician characteristics (length of experience), and health care setting characteristics (primary or secondary care) were associated with improved effects.

DATA SOURCES MEDLINE, Embase, PsycINFO, CINAHL, and Cochrane Register of Controlled Trials were searched from inception to May 31, 2016. The reference lists of eligible studies and other relevant systematic reviews were hand searched.

STUDY SELECTION Randomized clinical trials and controlled before-after studies of interventions targeting burnout in physicians.

DATA EXTRACTION AND SYNTHESIS Two independent reviewers extracted data and assessed the risk of bias. The main meta-analysis was followed by a number of prespecified subgroup and sensitivity analyses. All analyses were performed using random-effects models and heterogeneity was quantified.

MAIN OUTCOMES AND MEASURES The core outcome was burnout scores focused on emotional exhaustion, reported as standardized mean differences and their 95% confidence intervals.

RESULTS Twenty independent comparisons from 19 studies were included in the meta-analysis (n = 1550 physicians; mean [SD] age, 40.3 [9.5] years; 49% male). Interventions were associated with small significant reductions in burnout (standardized mean difference [SMD] = −0.29; 95% CI, −0.42 to −0.16; equal to a drop of 3 points on the emotional exhaustion domain of the Maslach Burnout Inventory above change in the controls). Subgroup analyses suggested significantly improved effects for organization-directed interventions (SMD = −0.45; 95% CI, −0.62 to −0.28) compared with physician-directed interventions (SMD = −0.18; 95% CI, −0.32 to −0.03). Interventions delivered in experienced physicians and in primary care were associated with higher effects compared with interventions delivered in inexperienced physicians and in secondary care, but these differences were not significant. The results were not influenced by the risk of bias ratings.

CONCLUSIONS AND RELEVANCE Evidence from this meta-analysis suggests that recent intervention programs for burnout in physicians were associated with small benefits that may be boosted by adoption of organization-directed approaches. This finding provides support for the view that burnout is a problem of the whole health care organization, rather than individuals.

Editorial page 164

Supplemental content

CME Quiz at jamanetworkcme.com

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Burnout is a syndrome consisting of emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment, which is primarily driven by workplace stressors.[1(pp191-218)2] Burnout is a major concern for physicians. Nearly half of practicing physicians in the United States experience burnout at some point in their career.[3] Although there are substantial differences by specialty, physicians at the front line of care report the highest rates of burnout.[4]

Burnout has serious negative consequences for physicians, the health care system, and for patient outcomes. Burnout in physicians has been linked with lower work satisfaction, disrupted personal relationships, substance misuse, depression, and suicide.[5,6] Within health care organizations, burnout is related to reduced productivity, high job turnover, and early retirement.[7-9] Importantly, burnout can result in an increase in medical errors, reduced quality of patient care, and lower patient satisfaction.[10-15] It is not surprising, therefore, that wellness of physicians is increasingly proposed as a quality indicator in health care delivery.[16]

Leading drivers of burnout include excessive workload, imbalance between job demands and skills, a lack of job control, and prolonged work stress.[17] Recently, there has been a shift from viewing burnout as an individual problem to a problem of the health care organization as a whole, rooted in issues related to working environment and organizational culture.[18] It has been suggested that reducing risk of burnout in physicians requires change in organizations, as well as support for individual physicians.[19]

Interventions for burnout can be classified into 2 main categories, physician-directed interventions targeting individuals and organization-directed interventions targeting the working environment.[20,21] Physician-directed interventions typically involve mindfulness techniques or cognitive behavioral techniques to enhance job competence and improve communication skills and personal coping strategies. Organization-directed interventions can involve simple changes in schedule and reductions in the intensity of workload or more ambitious changes to the operation of practices and whole health care organizations. These usually involve improved teamwork, changes in work evaluation, supervision to reduce job demand and enhance job control, and increasing the level of participation in decision making.

We conducted a systematic review and meta-analysis of studies that evaluated interventions to reduce burnout in physicians. We decided to focus on burnout scores as the main outcome of this review because burnout is the best-recognized serious negative consequence of work stress in physicians[18,22] and the most commonly reported, and consistently measured, outcome of work stress interventions.[20,21,23] Moreover, by focusing on burnout, we established a level of homogeneity in terms of outcomes that allowed us to test our aims meta-analytically.

Our first objective was to assess the effectiveness of interventions in reducing burnout. Second, we examined what types of interventions are the most effective (organization directed, physician directed). Third, we examined whether there are any differences in the effect of interventions in different health care settings (primary care, secondary or intensive care) and in physicians with different levels of working experience. Our rationale was that physicians working in different organizational settings or physicians with different levels of experience might have diverse needs and might respond differently to burnout interventions.

Key Points

Question Are interventions for reducing burnout in physicians effective?

Findings This meta-analysis of 20 controlled interventions on 1550 physicians found that existing interventions were associated with small and significant reductions in burnout. The strongest evidence for effectiveness was found for organization-directed interventions, but these interventions were rare.

Meaning More effective models of interventions are needed to mitigate risk for burnout in physicians. Such models could be organization-directed approaches that promote healthy individual-organization relationships.

Methods

The reporting of the review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (eTable 1 in the Supplement).[24] The protocol is included in eMethods 1 in the Supplement.

Eligibility Criteria

The study population comprised physicians of any specialty in the primary, secondary, or intensive care setting including residents and fellows. Studies based on a mix of physicians and other health care professionals were included in the review if the physicians made up at least 70% of the sample.

Eligible interventions were any intervention designed to relieve stress and/or improve performance of physicians and reported burnout outcomes including physician-directed interventions and organization-directed interventions. Physician-directed interventions focused on individuals (eg, cognitive behavioral therapies, mindfulness-based stress reduction techniques, educational programs for improving communication skills) whereas organization-directed interventions introduced changes in the resources, the working environment, and/or work tasks to decrease stress (eg, changes in the intensity and/or schedule of the workload or deeper improvements in the operation of health care organizations and teamwork).

Eligible comparisons included any type of control (eg, waiting list or no intervention). Outcome was burnout measured using validated tools such as the Maslach Burnout Inventory (MBI)[1] or other validated measures of burnout. Eligible study designs were quantitative intervention designs described in the Cochrane handbook including randomized clinical trials, nonrandomized trials, controlled before-after studies, and interrupted time series. Context was any health care setting including primary care and secondary care.

Exclusion Criteria

Interventional studies not reporting data on burnout outcomes but providing data on general stress, well-being, or job satisfaction were excluded, as was gray literature.

Search Strategy and Data Sources

Five electronic bibliographic databases were searched from inception until May 31, 2016: MEDLINE, Embase, CINAHL, Cochrane Register of Controlled Trials, and PsycINFO. The search strategy included combinations of 3 key blocks of terms (burnout; physicians; interventions) using medical subject headings (MESH terms) and text words (eMethods 2 in the Supplement). Searches were supplemented by hand searches of the reference lists of eligible studies and systematic reviews.

Study Selection

The results of the searches were exported in Endnote and duplicates were removed. Study selection was completed in 2 stages. First, the titles and abstracts of the studies were screened and subsequently the full texts of relevant studies were accessed and further screened against the eligibility criteria. The title and abstract screening was undertaken by M. P., whereas 2 independent reviewers were involved in full-text screening. Interrater reliability was high ($\kappa = 0.96$). Disagreements were resolved through discussions.

Data Extraction

An Excel data extraction form was developed and initially piloted in 5 randomly selected studies. Quantitative data for meta-analysis were extracted on a separate extraction sheet. Authors were contacted when data were missing or incomplete. The following descriptive information was extracted from the studies:

- Study: research design, method of recruitment, and content of control
- Participants: sample size, age, sex, setting and/or specialty, years of work experience
- Intervention: content, delivery format, intensity, follow-up time points
- Outcomes: scores in burnout including emotional exhaustion, depersonalization, and professional accomplishment.

Risk of Bias Assessment

The critical appraisal of the studies was performed using the Effective Practice and Organisation of Care (EPOC) risk of bias tool.[25] It was chosen because it is appropriate for use across all types of intervention designs described in the Cochrane handbook. The EPOC tool contains 9 standardized criteria scored on a 3-point scale, corresponding to low, unclear, and high risk.

Data Analysis

Standardized mean differences (SMDs) and associated confidence intervals for the burnout outcomes of all the studies were calculated in Comprehensive Meta-Analysis.[26] The pooled SMDs and the forest plots were computed using the metaan command in Stata 14.[27] The main meta-analysis evaluated the effectiveness of the interventions in reducing burnout. The MBI measure for burnout provides ratings in 3 domains (emotional exhaustion, depersonalization, and personal accomplishment). It is not recommended that they be combined.[1] In line with previous meta-analyses, we used only the emotional exhaustion domain of MBI in the analyses.[23] Emotional exhaustion is considered the most central aspect of burnout (some studies only use this domain), and other unidimensional measures of burnout focus on emotional exhaustion.[23,28] To ease the interpretation of the results we "back-transformed" the pooled SMD to a mean difference for the emotional exhaustion subscale, under certain assumptions. When data were available for more than 1 follow-up assessment point, the short-term assessment points were inserted in the main analysis. Three prespecified subgroup analyses[29] were carried out:

1. *Type of interventions*—we tested the effectiveness of physician-directed and organization-directed interventions.
2. *Working experience of physicians*—we examined the differential treatment effects across studies that recruited physicians with extensive working experience (mean of ≥5 years) and studies that recruited physicians with low experience (mean of <5 years). All studies classified into the low-experience category explicitly reported in the Methods that they recruited junior physicians.
3. *Health care setting*—we tested the effects of interventions separately in physicians based in primary care and in secondary care.

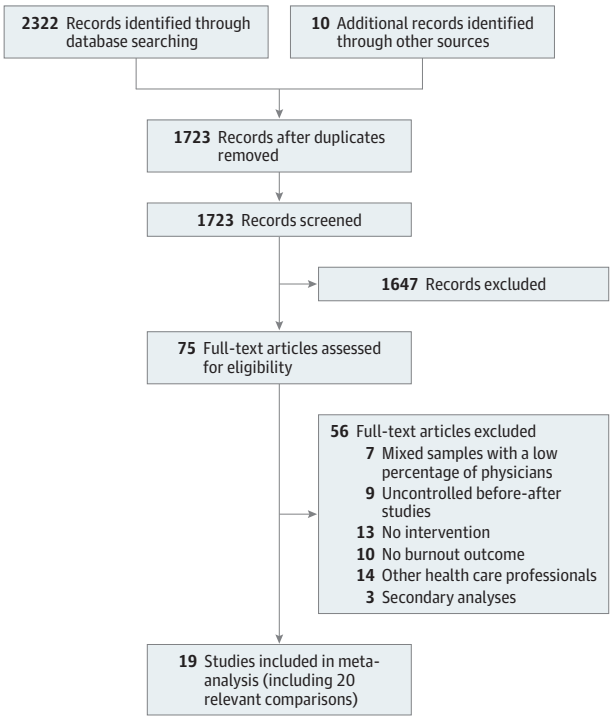
Two sensitivity analyses were performed. We examined the effects of interventions on the other 2 domains of MBI (depersonalization and personal accomplishment). We also examined whether effects were robust when only studies with low risk of bias scores were retained in the analyses.

Heterogeneity was assessed using the I^2 statistic. Conventionally, I^2 values of 25%, 50%, and 75% indicate low, moderate, and high heterogeneity.[30] All analyses were conducted using a random-effects model, even if I^2 was low. Random-effects models are more conservative and have better properties in the presence of any heterogeneity.[31,32] The Cohen Q test of between-group variance was used to test whether the effectiveness of burnout interventions is significantly different across subgroups. Cluster randomized clinical trials were identified and the precision of analyses adjusted using a sample size/variation inflation method, assuming an intraclass correlation of 0.02. Provided that we identified 10 or more studies,[33] we aimed to use funnel plots and the Egger test to assess small-sample bias (an indicator of possible publication bias).[34] Funnel plots were constructed using the metafunnel command,[35] and the Egger test was computed using the metabias command.[36]

Results

As shown in **Figure 1**, the search strategy yielded 2322 articles. Following the removal of duplicates, 1723 articles were retained for title and abstract screening. Of these, 75 were relevant for full-text screening and 19 studies were included in

Figure 1. PRISMA Flowchart



Flowchart of the inclusion of studies in the review.

the review.[37-55] One study included a lower percentage of physicians (67%), but we retained it in the analyses to maximize the evidence base.[39]

Characteristics of Studies and Physicians

The **Table** presents the characteristics of the 19 studies (including 20 independent comparisons on 1550 physicians; mean [SD] age, 40.3 [9.5] years). Eight studies were conducted in the United States (42%), 4 in Europe, 3 in Australia, 2 in Canada, 1 in Argentina, and 1 in Israel. An equal proportion of men and women were recruited in the majority of studies.

Seven studies recruited physicians working in primary care (mostly labeled "general practitioners"), 10 studies recruited physicians in secondary care (eg, physicians in intensive care units, oncologists, and surgeons), and 2 studies recruited a mixed sample of physicians through their registration in national medical associations. Across all interventions, the main eligibility criteria were being a physician (working in a specific setting in most cases) and willingness to take part in the study. None of the studies specifically targeted physicians with certain severity levels of burnout. The majority of studies (n = 12 [67%]) were based on experienced physicians (mean working experience of ≥5 years) whereas 7 studies were based on recently qualified physicians (mean working experience of <5 years). With the exception of 1 study,[37] all used the MBI to assess the severity of burnout (eTable 2 in the Supplement).

Characteristics of Interventions

Interventions varied considerably in their characteristics including content, duration/intensity, and length of post-intervention assessment points (see Table). The majority (n = 12 [60%]) were physician-directed interventions that comprised mindfulness-based stress reduction techniques, educational interventions targeting physicians' self-confidence and communication skills, exercise, or a combination of these features.

Within the category of organization-directed interventions, 5 studies evaluated simple workload interventions that focused on rescheduling hourly shifts and reducing workload. Only 3 studies tested more extensive organization-directed interventions incorporating discussion meetings to enhance teamwork and leadership, structural changes, and elements of physician interventions such as communication skills training and mindfulness.

The duration of the interventions ranged from 2 weeks to 9 months. Follow-up assessment points ranged from 1 day to 18 months after the intervention. All interventions were delivered in face-to-face format.

Risk of Bias Characteristics

The results of the risk of bias assessment are presented in eFigure 1 in the Supplement. Eighteen comparisons were randomized clinical trials (95%) whereas 2 were controlled before-and-after studies. Fifteen comparisons (75%) fulfilled 6 of the 9 risk of bias criteria (a higher score indicates lower vulnerability to bias). Three comparisons fulfilled 8 or 9 criteria (17%) while 5 fulfilled 4 or fewer criteria (25%); most moderately accounted for the risk of bias criteria.

Main Meta-Analysis: Effectiveness of Interventions in Reducing Burnout

Interventions were associated with small, significant reductions in burnout (SMD = −0.29; 95% CI, −0.42 to −0.16; I^2 = 30%; 95% CI, 0 to 60%) (**Figure 2**). The back-transformed emotional exhaustion score for the intervention group was 15.1 (95% CI, 13.9 to 16.5), compared with a control group score of 17.9 and assuming a standard deviation of 8.97 for the effect.

Subgroup Analyses

Types of Interventions

Physician-directed interventions were associated with small significant reductions in burnout (SMD = −0.18; 95% CI, −0.32 to −0.03; I^2 = 11%; 95% CI, 0 to 49%; back-transformed emotional exhaustion score = 16.2; 95% CI, 14.7 to 17.3 compared with a control group score of 17.9) whereas organization-directed interventions were associated with medium significant reductions in burnout (SMD = −0.45; 95% CI, −0.62 to −0.28; I^2 = 8%; 95% CI, 0 to 60%; back-transformed emotional exhaustion score = 13.9; 95% CI, 12.4 to 14.7 compared with a control group score of 17.9) (**Figure 3**). The effects of organization-directed interventions were significantly larger than the effects of physician-directed interventions (Cohen Q = 4.15, P = .04).

Working Experience

The pooled effect of interventions on burnout scores was medium and significant across studies mainly based on experienced physicians (SMD = −0.37; 95% CI, −0.58 to −0.16;

Table. Characteristics of Studies and Interventions Included in This Review

Source	Country	Recruitment and Eligibility	Health Care Setting	Male Sex, Proportion (%)	Age, Mean, y	Time in Practice, y	Research Design	Intervention	Control	Follow-up Point
Ali et al,[37] 2011	United States	Physicians with various specialties working in intensive care units	Intensive care	24/45 (54)	41	Mean, 8	Cluster RCT	Organization-directed (focused on workload or schedule): Two intensivist staffing schedules were compared: continuous and interrupted (rotations every 2 wk) for 14 mo.	Continuous schedule	9 mo
Amutio et al,[38] 2015	Spain	Physicians with various specialties registered in a national medical organization	Mixed sample of physicians	18/42 (43)	43	Mean, 9	RCT	Physician-directed: A 2-mo mindfulness-based stress reduction program that involved a weekly Powerpoint presentation of stressful topics related to the medical profession (eg, healing with suffering), a weekly 45-min mindfulness exercise, a weekly 60-min group reflection about the weekly topic, and the mindfulness exercise	Waiting list	1 mo
Asuero et al,[39] 2014	Spain	Physicians and allied health professionals in primary care	Primary care	6/68 (8)	47	Mean, 10	RCT	Physician-directed: 2 mo (8 sessions of 2.5 h/wk plus a 1-d session of 8 h) of contemplation–meditation exercises such as mindfulness meditation, in which participants focus on the present-moment experience and contemplate nonjudgmentally bodily sensations, breathing, sounds, and thoughts	Waiting list	2 mo
Bragard et al,[40] 2010	Belgium	Internal medicine residents with an interest in psychological training	University-based hospital	34/96 (35)	28	Mean, 3	RCT	Physician-directed: a 30-h communication skills training and a 10-h stress management skills training in small groups (≤7 participants)	Waiting list	2 mo
Butow et al,[42] 2008	Australia	Oncologists from 6 tertiary care hospitals in 6 Australian cities that incorporated oncology outpatient clinics	Teaching hospitals, oncology unit	15/30 (50)	44	Mean, 16	RCT	Physician-directed: 1.5-d intensive face-to-face workshop with 3-6 participants incorporating presentation of principles, a DVD modeling ideal behavior, and role play practice, followed by 4 1.5-h videoconferences at monthly intervals incorporating role play of physician-generated scenarios	Waiting list	3 and 6 mo
Butow et al,[41] 2015	Australia	Oncologists working in major cancer centers involved in the treatment of patients with early breast cancer	Cancer centers or clinics	26/62 (42)	45	>6	RCT	Physician-directed: A 7-h interactive face-to-face workshop training with a follow-up telephone call 1 mo later. The elements of the training workshop were evidence based and used accepted adult learning principles.	No intervention	Postintervention
Garland et al,[43] 2012	Canada	Physicians in ICUs	ICUs	27/34 (80)	Range, 41-60	Most >10	Crossover RCT	Organization-directed (focused on workload): shift work staffing in which there was 24/7 intensivist presence. The same pool of intensivists supplied day shift and night shift coverage. In any given week, a single intensivist was responsible for all 7 day shifts (8 AM-5:30 PM, 8 AM-3 PM on weekends), whereas 2 different intensivists alternated the 7 night shifts.	Standard staffing: 1 intensivist staffed an ICU for 7 d, was present during daytime, and took calls from home at night, returning to ICU as deemed necessary.	Postintervention
Gunasingam et al,[44] 2015	Australia	Postgraduate year 1 physicians in a single hospital	Teaching hospital	16/31 (52)	Range, 25-30 y	Mean, 1 y	RCT	Physician-directed: 3 1-h debriefing sessions and a focus group that explored themes around work-related stressors, coping mechanisms, and potential strategies to improve junior medical officer well-being	No intervention	2 wk
Linzer et al,[45] 2015	United States	Physicians working in 34 primary care clinics	Primary care	80/166 (48)	46	Mean, 12	Cluster RCT	Organization-directed (focused on communication, teamwork, and quality improvement): targeted quality improvement projects, improved communication, and changes in workflow	No intervention	12-18 mo
Lucas et al,[46] 2012	United States	General medicine inpatient service of a 500-bed public teaching hospital	General medicine service of hospital	32/62 (52)	38	Mean, 4	Cluster RCT	Organization-directed (focused on workload or schedule): assignment to random sequences of 2-wk shift rotations	4-wk rotations	1 mo

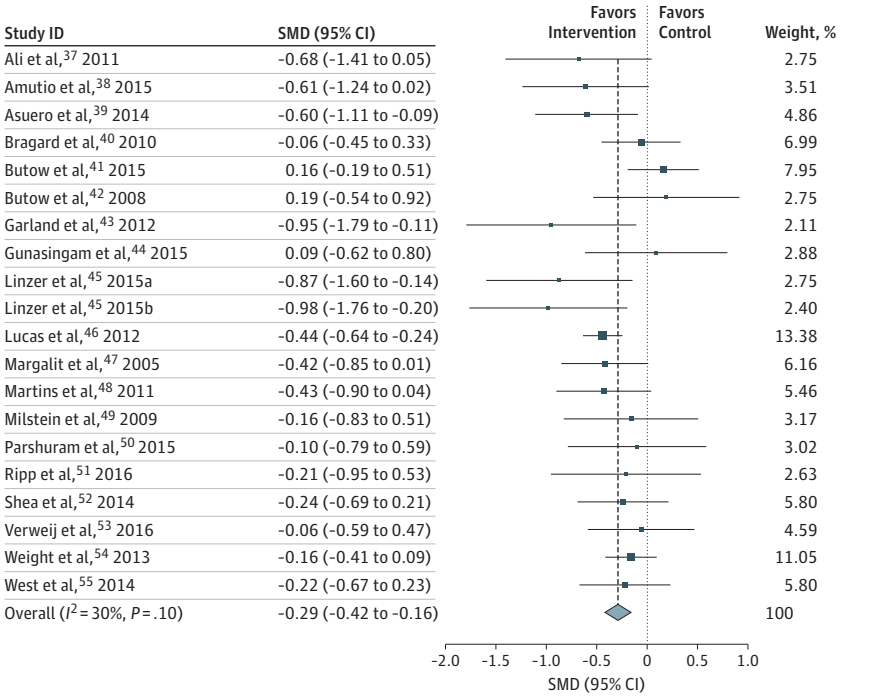
(continued)

Table. Characteristics of Studies and Interventions Included in This Review (continued)

Source	Country	Recruitment and Eligibility	Health Care Setting	Male Sex, Proportion (%)	Age, Mean, y	Time in Practice, y	Research Design	Intervention	Control	Follow-up Point
Margalit et al,[47] 2005	Israel	General practitioners randomly selected	Primary care	22/44 (50)	NR	Mean, 9	RCT	Physician-directed: 1 weekly 4-6 h workshop for a total of 12 wk. Interactive teaching intervention aiming to impart the knowledge, attitudes, and skills needed for adapting to the task of a physician in a busy community clinic	Noninteractive group	6 mo
Martins et al,[48] 2011	Argentina	Pediatric residents in a tertiary hospital	Tertiary hospital	14/74 (19)	27	Mostly experienced (>5 y)	RCT	Physician-directed: 2 2.5-h self-care workshops coordinated by mental health professionals, who addressed aspects of burnout syndrome such as identification of risk factors, coping behaviors, preventive behaviors, and self-care	No intervention	2 mo
Milstein et al,[49] 2009	United States	Pediatric department physicians	Primary care	7/15 (47)	NR	Mean, 11	RCT	Physician-directed: 45-min stress reduction intervention in which one reflects on the background of the situation that may have generated stress professionally, examines one's affect, analyzes the most troublesome aspects of the situation, reflects on how one handled the situation, and provides oneself empathy (supportive comments)	No intervention	3 mo
Parshuram et al,[50] 2015	Canada	Residents in anesthesia, surgery, and emergency medicine training programs who performed overnight duty	ICUs	25/47 (53)	NR	Range, 1-3	RCT	Organization-directed (focused on workload or schedule): Residents in 2 university-affiliated ICUs were randomly assigned (in 2-mo rotation blocks from January to June 2009) to in-house overnight schedules of 12 h.	16- and 24-h overnight schedules	Postintervention
Ripp et al,[51] 2015	United States	First-year residents in an internal medicine unit	Internal medicine residency program	20/39 (51)	NR	Mean, 1	RCT	Physician-directed: 18 1-hour bimonthly groups who met regularly with trained discussion group leaders to discuss topics related to stress, balance, and job satisfaction	Lunch vouchers	Postintervention
Shea et al,[52] 2014	United States	Graduate internal medicine interns in the oncology department of a hospital	Internal medicine service of hospital	59/106 (56)	28	Range, 1-2	RCT	Organization-directed (focused on workload or schedule): a 5-h period of protected time in which interns were expected to sleep (12:30 AM to 5:30 AM) for 4 wk	No intervention	Postintervention
Verweij et al,[53] 2016	Netherlands	General practitioners affiliated with Dutch training hospitals	Primary care	28/43 (65)	55	Mean, 24	Controlled before-after study	Physician-directed: 8 weekly sessions each lasting 2.5 h, and a 1-d silent retreat between the sixth and seventh session focused on mindfulness. Participants were encouraged to focus their attention on the present moment and to observe their own thoughts, feelings, and behavior in a nonjudgmental way. Some of the themes discussed were awareness of pleasant or unpleasant sensations, feelings, or thoughts; perceptual biases and filters; burnout; boundaries or conflict management; and self-care.	Waiting list	Postintervention
Weight et al,[54] 2013	United States	Residents and fellows at Mayo Clinic in Rochester, New York	Secondary care (various specialties)	368/628 (59)	31	Low experience (59% <3 y)	Controlled before-after study	Physician-directed: 12-wk, self-directed and team-based incentivized exercise program including self-reported exercise and gym attendance. Participants were encouraged to form teams of 5 for accountability and mutual commitment to exercise. Individual and team points were calculated and emailed to participants weekly.	No intervention	Postintervention
West et al,[55] 2014	United States	Practicing physicians in the Department of Medicine at the Mayo Clinic in Rochester, New York	Department of General Medicine	49/74 (65)	NR	Mean, 8	RCT	Organization-directed (components from physician-directed interventions): 19 biweekly facilitated discussion groups incorporating elements of mindfulness, reflection, shared experience, and small-group learning for 9 mo. Protected time (1 h of paid time every other week) for participants was provided by the institution.	No intervention	3 and 12 mo

Abbreviations: ICU, intensive care unit; NR, not reported; RCT, randomized clinical trial.

Figure 2. Forest Plot of the Effects of Interventions on Burnout Scores



Meta-analysis of individual study and pooled effects. Each line represents 1 study in the meta-analysis, plotted according to the standardized mean difference (SMD; roughly the difference between the mean score of participants in the intervention group and the mean score of participants in the control group). The squares show the SMD for each study, and the diamond represents the pooled SMD. Weights are from random-effects model.

I^2 = 42%; 95% CI, 0 to 70%; back-transformed emotional exhaustion score = 14.6; 95% CI, 12.7 to 16.5 compared with a control group score of 17.9) and small and significant across studies on physicians with limited experience (SMD = −0.27; 95% CI, −0.40 to −0.14; I^2 = 0%; 95% CI, 0 to 75%; back-transformed emotional exhaustion score = 15.5; 95% CI, 13.8 to 16.9 compared with a control group score of 17.9) (eFigure 2 in the Supplement). This group difference was nonsignificant (Q = 0.92, P = .34).

Health Care Setting

Interventions in primary care were associated with small to medium reductions in burnout (SMD = −0.39; 95% CI, −0.59 to −0.19; I^2 = 4%; 95% CI, 0 to 69%; back-transformed emotional exhaustion score = 14.4; 95% CI, 12.6 to 16.2 compared with a control group score of 17.9). Interventions in secondary care were associated with small significant reductions in burnout (SMD = −0.24; 95% CI, −0.41 to −0.07; I^2 = 41%; 95% CI, 0 to 65%; back-transformed emotional exhaustion score = 15.7; 95% CI, 13.9 to 17.4 compared with a control group score of 17.9) (eFigure 3 in the Supplement). This difference was nonsignificant (Q = 0.51, P = .48).

Sensitivity Analyses

The treatment effect derived by studies at lower risk of bias (ie, scoring low on 6 of the 9 risk of bias criteria) was similar to the overall effects of the main analysis (SMD = −0.32; 95% CI, −0.49 to −0.14; I^2 = 42%; 95% CI, 0 to 70%) (eFigure 4 in the Supplement).

Interventions were associated with very small significant reductions in depersonalization (SMD = −0.21; 95% CI, −0.35 to −0.06; I^2 = 33%; 95% CI, 0 to 68%) (eFigure 5 in the Supplement) and small improvements in personal accomplishment (SMD = 0.30; 95% CI, 0.15 to 0.45; I^2 = 0; 95% CI, 0 to 58%) (eFigure 6 in the Supplement). The subgroup analyses in these 2 domains showed similar results but were based on a smaller number of studies (eTable 3 in the Supplement).

Small-Study Bias

We found no evidence of funnel plot asymmetry, which might indicate publication bias for the main, or subgroup analyses (Egger test P = .11 for main analysis) (**Figure 4**).

Discussion

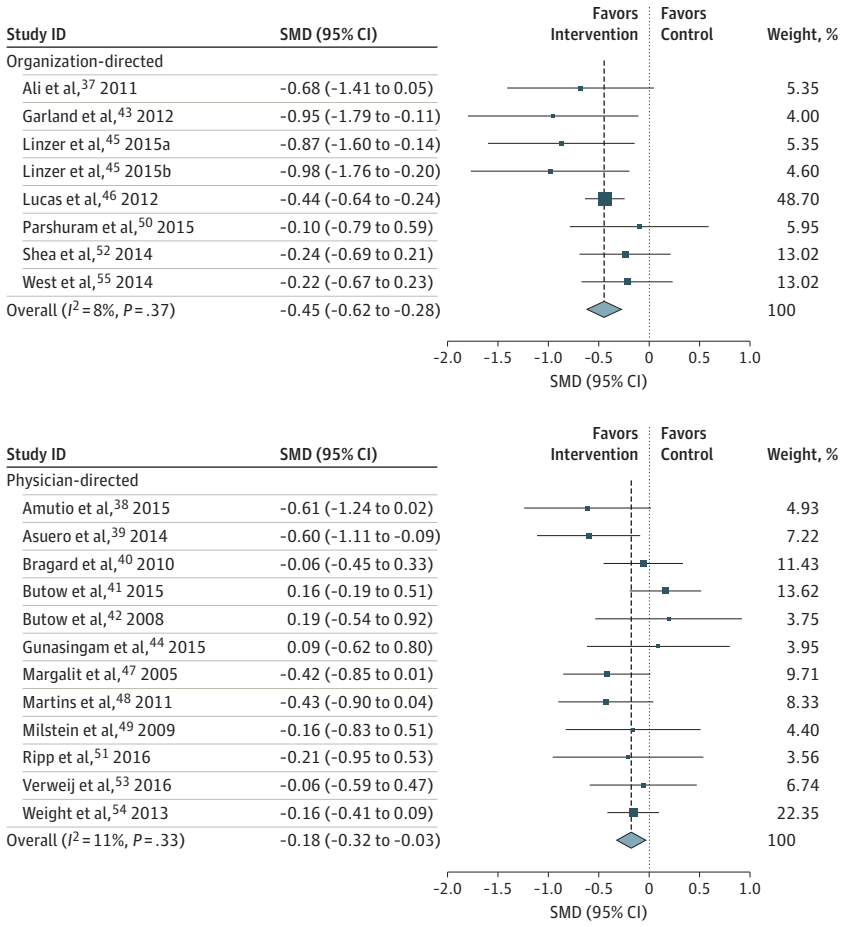
Summary of Main Findings

This meta-analysis showed that interventions for physicians were associated with small significant reductions in burnout. Organization-directed interventions were associated with higher treatment effects compared with physician-directed interventions. Interventions targeting experienced physicians and delivered in primary care showed evidence of greater effectiveness compared with interventions targeting less experienced physicians and delivered in secondary care, but these group differences were nonsignificant.

Strengths and Limitations

This is a comprehensive meta-analysis of controlled interventions aimed at reducing physician burnout. The 2 greatest threats to the validity of meta-analysis are heterogeneity and publication bias. However, the biggest strength of this work

Figure 3. Forest Plot of the Effects of Different Types of Interventions on Burnout Scores



Subgroup analysis of individual study and pooled effects of physician-directed and organization-directed interventions on burnout scores. Each line represents 1 study in the meta-analysis, plotted according to the standardized mean difference (SMD). The squares show the SMD for each study, and the diamond represents the pooled SMD. Weights are from random-effects model.

is the large number of identified and meta-analyzed controlled comparisons (20, when approximately 11.5% of all meta-analyses include ≥10 studies), which allows us to reliably estimate and model heterogeneity levels.[57] In addition, the size of the meta-analysis allowed us to assess publication bias with adequate power.[33] Although publication bias tests are rarely conclusive, we did not observe any bias indications in the plot or test.

The included studies differed significantly in terms of content of interventions, study design and/or quality, and length of follow-up that limit the extent to which broad conclusions can be drawn about the overall effectiveness of physician interventions. However, estimates of heterogeneity in the pooled analyses were low to moderate by conventional thresholds and random-effects models were applied in all analyses.[58] Heterogeneity was further addressed by conducting prespecified subgroup analyses (within the limits of power).[59] While this is a useful approach for producing guidance to design and deliver the most effective interventions, subgroup analyses should be interpreted cautiously because other, uncontrolled differences between studies might account for the results.[60,61]

Comparison With Previous Systematic Reviews

Three existing systematic reviews have examined the effectiveness of work stress interventions in health care professionals, with only 1 of these specifically focused on physicians.[21,62,63] Our findings regarding the overall effectiveness of burnout interventions and the increased effectiveness of organizational interventions are in agreement with the most recent meta-analysis on physician burnout.[63] In comparison, we narrowed our attention to controlled interventions and we undertook additional evidence-based prespecified subgroup analyses to examine whether the characteristics of interventions, physicians, and health care settings influenced the overall effect of burnout interventions. This decision was based on the recognition that controlled interventions offer the best opportunity to reach rigorous conclusions about the effectiveness of the tested interventions and that intervention studies on physician burnout are highly heterogeneous. This approach enabled us to draw informative conclusions regarding the effectiveness of burnout interventions among physicians that take into account the influence of the distinct features of interventions, physicians, and health care settings.

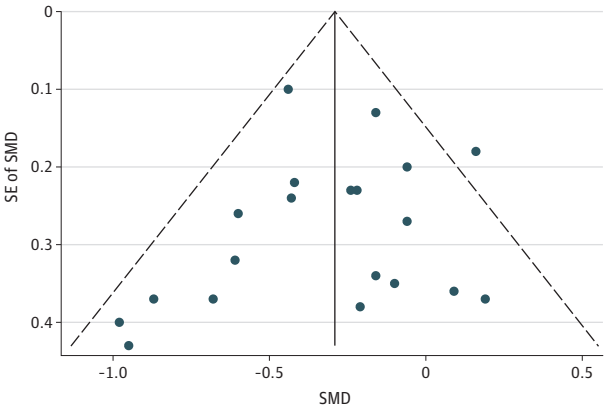
Implications for Researchers, Clinicians, and Policymakers

Even though many studies have examined risk factors for burnout in physicians, relatively few intervention programs have been developed and evaluated. Our main finding is that the treatment effects were significant but small, equal to a 3-point reduction in the emotional exhaustion domain of the MBI. At present, the low quality of the research evidence does not allow firm practical recommendations, but we offer some insights for research and clinical directions.

Organization-directed interventions were more likely to lead to reductions in burnout, but there were large variations in terms of actual approaches, intervention ingredients, and intensity. Those that combined several elements such as structural changes, fostering communication between members of the health care team, and cultivating a sense of teamwork and job control tended to be the most effective in reducing burnout.[45] However, such intense organization-directed interventions were rare and were not evaluated widely. The majority of organization-directed interventions that we included in the analyses introduced simple reductions in the workload or schedule changes. Concerns about implementation and delivery costs of organization-directed interventions, especially if they involve complex and major health care system changes, might explain their scarcity.[20,64] A recent example promoting healthy individual-organization relationships is the Listen-Act-Develop model implemented in Mayo Clinic.[65] Large-scale cluster-randomized trials of such programs at the institutional or even at the national level that emphasize organizational culture by creating a safe space for staff to acknowledge and decrease stress are possibly an optimal framework for mitigating burnout.

Physician-directed interventions led to very small significant reductions in burnout. We found no evidence that the content (eg, mindfulness, communicational, educational components) or intensity of these interventions might increase the derived benefits based on our critical review. This finding, in combination with the larger effects of organization-directed interventions, supports the argument that burnout is rooted in the organizational coherence of the health care system.[19,66] If burnout is a problem of whole health care systems, it is less likely to be effectively minimized by solely intervening at the individual level. It requires an organization-embedded approach.[19] Moreover, physicians expected to deal with burnout individually and remotely from their practicing organization might view physician-directed interventions as a personal responsibility (or blame themselves for being less "resilient") rather than as a shared resource to create a flourishing health care environment.[65,67] There is some evidence that elements of the physician-directed interventions (eg, mindfulness) are effective when supported by organizational approaches.[23,55] However, other unexamined factors at the process of the intervention delivery or at the participant level might account for the observed differences in the effectiveness of organization-directed and physician-directed interventions. Research programs to understand the best context for the delivery, evaluation, and implementation of burnout interventions are required.[68-70]

Figure 4. Funnel Plot of Standardized Mean Differences (SMDs) vs Standard Error for Burnout Scores



Funnel plot with pseudo 95% confidence intervals. The outer lines indicate the triangular region within which 95% of studies are expected to lie in the absence of both biases and heterogeneity. The funnel plot shows no substantial asymmetry (Egger regression intercept −0.28, SE = 0.16, P = .11).[56]

Physicians based in different health care settings or at different stages of their career might face unique challenges and have different needs. We found smaller benefits for recently qualified and secondary care physicians. The evidence indicates that young physicians are at higher risk for burnout compared with experienced physicians,[4] so future research should focus on prevention among less experienced physicians. Interventions focused on enhancing teamwork, mentoring, and leadership skills might be particularly suitable for young physicians and for physicians dealing with intense work and patients with complex care needs.[71-73]

Conclusions

This meta-analysis found that physicians could gain important benefits from interventions to reduce burnout, especially from organization-directed interventions. However, this evidence is derived from interventions developed and evaluated in diverse groups of physicians and health care settings. Burnout is associated with serious risks to both physicians and patients; thus, it is imperative that physicians have access to evidence-based interventions that reduce the risk for burnout.

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Appendix F

VWELL

Task Force for Empowerment & Well-being
Second Order Recommendations

Vision 1	Missions	Strategies
Establish Institutional Accountability for Well-being 	A) Establish well-being as the foundation of VUMC's academic mission to provide excellence in clinical care, research, education.	I. Communicate well-being as an institutional value. II. Adopt accountability metrics for physician well-being. III. Establish a centralized role to advocate for well-being.
	B) Establish an environment that celebrates and reflects the value of each individual.	I. Communicate with respect; practice compassion for self and others. II. Confront inequities in well-being, beginning with gender.
	C) Prepare leaders to be accountable for well-being.	I. Equip leaders with skills to empower well-being. II. Increase visibility for career development, from entry to retirement.

Vision 2	Missions	Strategies
Empower Physician Excellence in Patient Care and Innovation 	A) Establish physicians as active participants in the design and improvement of workflows impacting the physician/patient relationship and discovery.	I. Establish a Physician Effectiveness Team to coordinate physician-involved process improvement within work units.
	B) Establish tools and protocols that empower physicians to increase practice efficiencies that will enhance patient satisfaction.	I. Within work units, establish physician leaders in process improvement initiatives impacting patient care and research.
	C) Create responsive systems with the resources necessary for practice efficiency.	I. Ensure adequate, quality staffing for physician roles to enable efficiencies in patient care, innovation, and education.

Vision 3	Missions	Strategies
Support Physician Self-Care 	A) Empower physicians to manage their well-being by adhering to the same medical standards as those recommended to their patients.	I. Ensure physicians have appropriate access to medical care. II. Provide time to intentionally plan and manage well-being. III. Establish "well-being navigators" to support physicians in identifying wellness needs/preferences, resource options, and scheduling.
	B) Provide accessible, high-quality options for personal health and well-being.	I. Provide access and resources to support exceptional child care options for physicians at all major locations. II. Provide for healthy eating options. III. Ensure convenient exercise choices.
	C) Create spaces and opportunities to build a sense of belonging and collegiality to the VUMC physician community.	I. Sponsor social opportunities with appropriate spaces for physicians to gather.

Appendix G

Peer Support for Clinicians: A Programmatic Approach

Jo Shapiro, MD, FACS, and Pamela Galowitz

Abstract

Burnout is plaguing the culture of medicine and is linked to several primary causes including long work hours, increasingly burdensome documentation, and resource constraints. Beyond these, additional emotional stressors for physicians are involvement in an adverse event, especially one that involves a medical error, and malpractice litigation. The authors argue that it is imperative that health care institutions devote resources to programs that support physician well-being and resilience. Doing so after adverse and other emotionally stressful events, such as the death of a colleague or caring for victims of a mass trauma, is crucial as clinicians are often at their most vulnerable during such times. To this end, the Center for Professionalism and Peer Support at Brigham and Women's Hospital redesigned the peer support program in 2009 to provide one-on-one peer support. The peer support program was one of the first of its kind; over 25 national and international programs have been modeled off of it. This Perspective describes the origin, structure, and basic workings of the peer support program, including important components for the peer support conversation (outreach call, invitation/opening, listening, reflecting, reframing, sense-making, coping, closing, and resources/referrals). The authors argue that creating a peer support program is one way forward, away from a culture of invulnerability, isolation, and shame and toward a culture that truly values a sense of shared organizational responsibility for clinician well-being and patient safety.

Burnout is plaguing the culture of medicine.[1–3] Characterized by emotional exhaustion, depersonalization, and a decreased sense of personal accomplishment, burnout negatively impacts patient care. Studies indicate that as many as one in three physicians experience burnout during the course of their career.[4,5] The literature links burnout to several primary causes including long work hours, increasingly burdensome documentation, and resource constraints.[6,7] Beyond these, an additional risk factor for emotional stress, isolation, and burnout is involvement in an adverse event, especially one that involves a medical error.[8–10]

Involvement in an adverse event, especially due to a medical error, can be devastating for physicians. Not only is the culture of medicine one of high standards and perfectionism, it is also one in which emotional reactions to adverse events are generally not acknowledged or openly discussed. This environment leaves physicians highly vulnerable. Common reactions of physicians involved in adverse events include sadness, shame, fear, and isolation.[9,10] Left unaddressed, these emotional reactions can be devastating—potentially leading to depression, anxiety, burnout, and even suicide.[1] Such fallout may negatively impact clinicians, teams, institutions, and, consequently, the quality of patient care.[11,12]

Another significant emotional stressor for clinicians is malpractice litigation. One well-known study estimated that by the age of 65, 99% of physicians in high-risk specialties (neurosurgery, thoracic–cardiovascular surgery, general surgery, orthopedic surgery, and plastic surgery) and 75% of physicians in low-risk specialties (dermatology, family general practice, pediatrics, and psychiatry) had faced a malpractice claim.[13] The impact of malpractice litigation on physicians' personal and professional lives has been well researched, with the research showing consequences that include emotional trauma, job strain, shame or doubt, difficulty coping, increased likelihood of stopping practice, practicing defensive medicine, and leaving a chosen specialty.[14–18]

Given all of these factors, it is therefore imperative that we devote resources to programs that support physician well-being and resilience. Doing so after adverse and other emotionally stressful events, such as the death of a colleague or caring for victims of a mass trauma, is crucial as we are often at our most vulnerable during such times.

Peer Support Program at Brigham and Women's Hospital

Peer support program development

The Center for Professionalism and Peer Support (CPPS) at Brigham and Women's Hospital (BWH) was founded in 2008. One of us (J.S.), as the CPPS's founding director, worked with colleagues to develop the CPPS's mission: to encourage a culture that values and promotes mutual respect, trust, and teamwork at BWH. This mission is enacted through multiple programmatic initiatives, one of which is a peer support program for clinicians. Below we describe the origin, structure, and basic workings of the peer support program.

A foundational component of the BWH peer support program is our commitment to having trained clinician peers (peer supporters) offer support to their colleagues (peers); in our experience, clinicians rarely access available support from mental health providers after adverse and other emotionally stressful events. The initial concept for a peer support program at

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BWH was developed in 2004 by Rick van Pelt, MD, and Janet Barnes, RN, JD, in collaboration with multiple colleagues, and was based on a group peer support model. In this group model, clinicians were trained as peer supporters by first responders, a professional group with robust peer support programs.

Our experience with this model, however, was that physicians who participated in the group peer support typically assumed the role of "team leader" and were uncomfortable sharing their emotional distress in front of a multidisciplinary group. This reluctance to expose personal vulnerability is consistent with our understanding that physicians generally find it highly challenging and countercultural to publicly acknowledge their self-perceived weakness in front of nonphysicians. We validated this observation in our 2012 survey study, in which we found that physicians want support from their physician colleagues.[19] Helmreich and Davies[20] aptly state about physicians and pilots that both groups' professions stress "the need for perfection and a deep perception of personal invulnerability." This professional attitude is both necessary and helpful in taking on the risks and responsibilities inherent in providing medical care, yet it can carry with it a propensity for isolation and emotional exhaustion.

In addition, there are situations where a particular clinician has been at the "sharp end of an error," and such a circumstance is not conducive to group peer support. Finally, many of the peer supporters trained in the group peer support model were not comfortable with group facilitation.

Given these shortcomings of the group peer support model, we redesigned the peer support program at BWH in 2009 (following the creation of the CPPS). Our new program provides one-on-one peer support to individuals following emotionally stressful events, including adverse events, from peer supporters who have been there themselves. If a team is likely to be affected, we offer group peer support facilitated by one of two licensed independent clinical social workers—both from our Employee Assistance Program (EAP)—and the CPPS director. Our program was one of the first of its kind, and over 25 national and international programs have been modeled off of it.

In addition to the peer support program, the CPPS also provides defendant peer support outreach to colleagues facing litigation or who have been reported to a regulatory body such as the Board of Registration in Medicine. Our defendant support program works in much the same way as our peer support program, with the defendant peer supporters being clinicians who have themselves been a defendant in a lawsuit.

Peer support outreach

During the first year of our program, after recruiting and training a core group of peer supporters (see below) and publicizing our work to the clinical staff, we sat back and waited for distressed clinicians to request our services. Our phones did not ring. We quickly came to understand that the same forces that keep physicians from speaking up in group peer support sessions were likely keeping them from proactively seeking help. It was clear that we needed to reach out to clinicians in need; we could not expect them to come to us.

Peer support referrals

We work closely with our colleagues throughout the hospital who are well positioned to make peer support referrals, including colleagues in risk management, patient safety and quality, the EAP, and clinical leaders. We also publicize our program through conferences such as departmental grand rounds, so that our colleagues will know they can contact the CPPS director when they are aware of clinicians who have been involved in an adverse or other emotionally stressful event. Peer support referrals are sent directly to the CPPS director who matches each clinician to a suitable peer supporter (see below). The peer supporter then directly reaches out to the peer. Instead of waiting to see who is suffering, we reach out to all clinicians about whom we are made aware. The outreach is confidential and invitational; the peer decides whether or not they want to access the support that is being offered. Depending on the type of event, we may also offer group peer support.

When offering support to a peer, it is important to keep in mind that denial can be a healthy coping mechanism for many people. No one should be made to talk about an event, and some clinicians will choose not to. When a peer supporter reaches out to a colleague who does not want to talk, the supporter expresses understanding and lets them know that peer support is available should they desire it at any time in the future. In addition, whether or not the peer elects to have peer support, the supporter asks permission to e-mail the peer information regarding coping strategies and further resources.

Matching peer supporter to peer

Although there is no algorithm for matching a peer to a peer supporter, there are several considerations we use. When there is an interventional injury, we assign a peer supporter who is an interventionalist because it is a unique circumstance for the clinician to be involved in such an event. With noninterventional events, we sometimes assign a supporter from a similar specialty, while other times we think speaking with a colleague from another discipline may help a clinician feel less judged or stigmatized. We avoid matching junior faculty peer supporters to peers who are more senior. We also work to match microculture and personality style; for example, a vulnerable resident or junior attending might be best served by receiving support from someone whose style is highly empathic. It is also important that the peer supporter not be someone who, in other contexts, is responsible for evaluating the clinician's performance with regard to the event (e.g., a supervisor, safety and quality officer, or the chief medical officer). When a clinician who works in safety and quality provides peer support, they need to make clear that they are functioning as a peer supporter, not as a safety and quality specialist. In addition, anyone who is potentially responsible for investigating the event at issue should not take on a role as peer supporter for that event. Peer support may be offered to anyone identified as having been involved in the event—physicians, nurses, technicians, administrators, etc.

The peer support conversation

We have identified several important components of the peer support conversation: outreach call, invitation/opening, listening, reflecting, reframing, sense-making, coping, closing, and resources/referrals (Table 1).

To initiate the conversation, the peer supporter sends a brief e-mail to the peer

Table 1

Important Components of the Peer Support Conversation

Component of peer support conversation	Sample language
Before the peer has agreed to the support conversation	
Outreach call (normalize the outreach and explain the program)	"We reach out to any clinician involved in an adverse or other emotionally stressful event, only because it can often be really stressful.… Every clinician I know has been in this position at some point in their career, and I have too.… We've found that most of us appreciate talking to a peer because it's hard for other people to know how this feels."
Once the peer has agreed to the support conversation	
Invitation/opening (provide an opportunity for the peer to talk openly about the event)	"Can you tell me about what happened?"
Listening	"How are you doing?"
Reflecting (honor, validate, and normalize the peer's emotions)	"These events can be really traumatic. As you know, as with most traumatic events, the difficult feelings usually slowly lessen over time.… The fact that you are upset shows that you are a caring, committed physician.… Everyone reacts differently to these events, so I am in no way saying that I know exactly what you are going through. But we do know that most of us have some common reactions."
Reframing (put the event in perspective)	"I'm going to tell you some things that you already know on an intellectual level, because sometimes it's important to hear them from a peer: Humans make errors at predictable rates; it's our job as an institution to create systems that prevent errors from reaching the patient.… You are not a bad physician; you have done so much good for people. You are not your error."
Sense-making (encourage the peer to use the event to make positive quality and safety changes, both personal and systems)	"If you can work with your program on looking at systems issues and also teach people about what you've learned, then you can help prevent your colleagues from making a similar error in the future, which is bound to happen if these issues aren't addressed."
Coping (elicit the peer's personal coping strategies, discuss his or her support system, and stress the importance of self-care and mindfulness)	"It's so important to do what you can to take care of yourself at stressful times like this.… What have you done in the past that has helped you through difficult times?"
Closing	"I really appreciate your willingness to share your thoughts with me.… Remember how much good you have done.… This happened because you are human, not because you are a bad clinician."
Resources/referrals (offer to all peers at the end of the conversation)	"As I mentioned, you will likely slowly start to feel better. But if you find that this gets under your skin in some way that is impairing your coping, please let us know.… We don't want you to suffer. You are not alone.… If you have any questions or concerns, let me know, and I'll make sure you get help from whomever you need."

stating simply that they are reaching out as a peer supporter and asking the peer to call or page them when they have a moment. No additional information is included in this e-mail. The outreach call, which is generally scheduled via e-mail, provides an opportunity for the peer supporter to establish context, normalize the outreach, and signal to the peer that peer support outreach is routine. If the peer accepts the invitation for support, the peer and the supporter agree on a mutually convenient time for a conversation, whether in person or by phone. The peer support conversation has various components beginning with the peer supporter inviting the peer to talk openly about their feelings. The peer supporter's role at this stage is to engage in reflective listening. The peer supporter will actively reflect with the peer, honoring the emotions that have been identified with validation and a sense of normalcy while also helping to reframe the event, putting it into a broader perspective. Often this reframing involves helping the peer make sense of the event, reminding them of the important work they do, and, if appropriate, reminding them of the possibility of looking at personal and systems learning to prevent colleagues from making similar errors in the future. A discussion of coping strategies is also important; this involves the peer supporter eliciting the peer's personal coping strategies, discussing their available support systems, and stressing the importance of self-care and mindfulness.

Before completing the conversation, the peer supporter will discuss available resources. These should be offered to all peers, even those who seem to be coping well. The peer is provided with contact information for other organizational resources such as mental health, risk management, and EAP professionals. It is important that the peer knows that the institution does not want anyone to feel isolated or alone.

The peer support conversation is usually a one-time intervention with a phone or e-mail follow-up approximately one week later. The peer is encouraged to contact the peer supporter if there are any ongoing issues; in such cases the peer supporter will facilitate a referral to an appropriate resource such as our peer support psychiatrist or an EAP professional.

During the conversation, peer supporters are careful to avoid getting drawn into judging the facts or details of the case. Many of us as clinicians are accustomed to playing this kind of role with colleagues—consulting and giving advice—but the peer support conversation is not a root cause analysis or legal discussion. In addition to empathic listening, the peer supporter may share their own experience. How much personal information to share will likely vary depending on the situation; as a rule the peer supporter should share enough to express true

empathy and normalize the peer's feelings, but not so much that the focus of the conversation shifts away from the peer. It is also important to understand that while the peer supporter may want to "fix" the peer's emotional pain, this is, of course, not possible. In our experience the value of empathic listening cannot be overstated.

Confidentiality

Peers have a high need for confidentiality; as such, we set a high bar for breaking confidentiality: A peer supporter may break confidentiality if they are concerned that the peer may harm others or themself. In these cases the peer supporter does have a duty to report these concerns to an authority (e.g., the hospital chief medical officer or a mental health practitioner) to help connect the peer with resources acutely.

Another concern with regard to confidentiality is discoverability in case of future litigation. In Massachusetts, peer support interventions are not peer-review protected. Therefore, we do not keep written notes of our conversations. Our risk management department and our medical liability insurers are highly supportive of the program; they feel there is an extremely low risk of any legal harm to the peer, and they feel there is potentially a major benefit in having emotionally supported clinicians who can take better care of their patients.

Recruiting and training peer supporters

In identifying a group of clinicians to serve as peer supporters, we selected physicians and nurses from multiple clinical divisions within the hospital. We felt it was important to have peer-nominated supporters because the peer supporter needs to be both a respected clinician as well as someone with the relational skills to successfully navigate an emotionally charged conversation with a peer. Although we did initially train some residents to be peer supporters, they have mostly graduated and no longer work at BWH.

Before each peer support training session we coordinate with division chiefs and ask them to send out a nomination letter on our behalf. The letter introduces the peer support program and asks clinicians to nominate peers within their discipline who they feel would be well suited to the role of peer supporter. This nomination process helps us identify the most respected and qualified peer support candidates. In collaboration with our EAP colleagues, we have trained a network of over 60 physicians and nurses to provide one-on-one peer support interventions as peer supporters. This training takes place in groups of approximately 15 to 20 participants. The CPPS director also trains peer supporters at outside institutions in interactive half-day workshops.

The peer supporter training includes various exercises that prompt reflection on the significant stresses faced by clinicians after adverse and other emotionally stressful events as well as the serious negative impact those stresses can have on their patients and families as well as the clinicians' lives. The training details both the principles of peer support as well as the common pitfalls in supporting peers. A key component of the training is simulation, where peer support is practiced as well as demonstrated. Finally, when the training is at an outside institution, there is a discussion of how that institution can operationalize the peer support program.

Program support

Our institution supported the creation and development of the CPPS beginning in 2008.[21] This support allowed us to bring several programs, including the peer support program, under a single umbrella. The rationale for the need to support such programs was multifactorial, including such benefits as improved patient safety and quality as well as employee well-being, morale, retention, and productivity. The CPPS staff includes a physician director (0.7 full-time equivalent [FTE]), a physician associate director (0.1 FTE), and a full-time program manager (1.0 FTE). The CPPS director reports to the hospital's chief medical officer, who has consistently been supportive of our work and whose budget provides our financial support.

Program scope

Between January 2012 and December 2015, we have made 220 outreach calls to individual clinicians (between 4 and 5 per month on average). Perhaps not surprisingly, 135 (61%) of these clinicians work in one of four hospital departments: emergency medicine, obstetrics, surgery, or anesthesia. This is likely because the adverse events in these departments tend to be more widely noticed. Over this same period, we have supported over 240 clinicians in multidisciplinary group peer support sessions. We believe the program does not yet reach many clinicians who might benefit from the outreach, such as those involved in an error in the ambulatory setting, where the teams are smaller and the errors less acute. We are working closely with leaders in ambulatory patient safety and other departments we do not currently reach to address this. The work of the CPPS is now also integrated with the Department of Quality and Safety and the hospital's ongoing Just Culture initiative.

Peer Support: Some Limitations and a Way Forward

Our peer support program has some limitations. For example, we recognize that inevitably adverse or other emotionally stressful events occur that may not rise to the level of institutional awareness; as a result, some clinicians in need of support are likely not receiving it. Furthermore, our program does not address chronic stress as effectively as stress from acute events.

The program has face validity; we certainly know the real negative consequences of not providing support to clinicians after adverse and other emotionally stressful events.[22] And as mentioned above, we know from research that physicians want support from physician colleagues.[19] We were also involved in a recently published study showing that speaking with a colleague about the experience was correlated with resilience and positive coping after adverse and other emotionally stressful events.[23] It will be important to study various outcomes of our program so we can continue to improve it. Therefore, we are currently in the process of developing a survey study to ascertain the effects of peer support interventions on the peers themselves.

It is crucial that our health care institutions invest in efforts that acknowledge and address clinician vulnerability. We cannot take care of patients if we ourselves are emotionally compromised and unsupported. Support programs are especially important for academic health care institutions where our students

and trainees are early in the process of professional identity formation. Creating a peer support program is one way forward, away from a culture of invulnerability, isolation, and shame and toward a culture that truly values a sense of shared organizational responsibility for clinician well-being and patient safety.

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Appendix H

Women's Health Issues 27-3 (2017) 382–390

WOMEN'S HEALTH ISSUES

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Career Policies

Fostering Resilience among Mothers under Stress: "Authentic Connections Groups" for Medical Professionals

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A B S T R A C T

Background: We report on effects of an intervention to foster resilience among professional women at high risk for stress and burnout: health care providers (physicians, PhD clinicians, physician assistants, and nurse practitioners) who are mothers.

Methods: Between February and November 2015, 40 mothers on staff at the Mayo Clinic, Arizona, were assigned randomly to either 1) 12 weekly 1-hour sessions of a structured, relational supportive intervention, the Authentic Connections Groups ($n = 21$) with protected time to attend sessions or to 2) 12 weekly hours of protected time to be used as desired (controls; $n = 19$). Participants were assessed at baseline, after the intervention, and 3 months follow-up on multiple psychological measures plus plasma cortisol.

Results: Across the 12 weeks of the intervention groups, there were zero dropouts. After the intervention, analyses of covariance showed significantly greater improvements ($p < .05$) for mothers in the Authentic Connections Groups than control condition for depression and global symptoms. By 3 months follow-up, significant differences were seen for these two dimensions and almost all other central variables, including self-compassion, feeling loved, physical affection received, and parenting stress, with moderate effect sizes (η_p^2 0.08–0.19; median, 0.16). Participants in the Authentic Connections Groups (but not control) condition also showed significant reductions in cortisol levels at both after the intervention and follow-up.

Conclusions: Facilitated colleague support groups could be a viable, low-cost, preventive intervention to mitigate burnout and distress for mothers in high-stress professional settings such as hospitals, resulting in personal benefit, greater engagement at work, and attenuated stress associated with parenting.

In this study, we report on initial testing of a supportive group-based intervention for professional women at high risk for distress and burnout: medical care professionals—physicians, physician assistants (PAs), and nurse practitioners (NPs)—who are mothers. By the very nature of their work, medical care providers experience high everyday stress, and burnout among them is a problem of great concern (Beresin et al., 2016; Shanafelt et al., 2012). Between 30% and 40% of U.S. physicians experience burnout as manifested in relatively high job dissatisfaction, potentially compromised quality of care, and plans for early retirement (Dyrbye & Shanafelt, 2011; Shanafelt et al., 2012; Wallace, Lemaire, & Ghali, 2009).

More so than their male counterparts, women health care providers are at significant risk for stress (Dyrbye et al., 2011). Their increased risk is typically due to the component of emotional exhaustion (depersonalization, the other component, occurs more in men). In a study of U.S. surgeons, alcohol abuse and/or dependence a) occurred more often among women than

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men (26% vs. 15%), and b) was linked with depression and burnout (Oreskovich et al., 2012). Most seriously, the relative risk of suicide among physicians versus the general population is between 1.1 and 3.4 for men, and almost twice as high, between 2.5 and 5.7, for women (Hawton, Clements, Sakarovitch, Simkin, & Deeks, 2001; Lindeman, Laara, Hakko, & Lonnqvist, 1996).

A major factor implicated in women's burnout is likely ego depletion—or diminished psychological resources—from multiple caregiving responsibilities (Luthar, 2015). Aside from care for patients, these women are generally primary caregivers for their children. Among married/partnered physicians with children, women spend the equivalent of a full work day per week, more than men, on domestic activities (Jolly et al., 2014). When both partners were employed, women physicians were about three times as likely as men to take time off when child care arrangements were disrupted, and to report that child-rearing had slowed their career advancement (Dyrbye et al., 2011), and more than 40% of women reported that recent work–home conflicts had been resolved in favor of their partners' careers. Collectively, these findings suggest the continued prevalence, among many contemporary U.S. physicians, of traditionally held societal beliefs about women's role in the home versus the workforce (Dyrbye et al., 2011).

The maintenance of higher quality of care provided to patients might further exacerbate risks among women physicians as compared to men. Although some might argue that career interruptions for child-rearing and greater tradeoffs between home versus work could adversely their work (and possibly justify lower salaries than those of men; Jagsi et al., 2102; Jolly et al., 2014; Nonnemaker, 2000; Seabury, Chandra, & Jena, 2013), studies have recurrently shown that female physicians in fact provide better quality of care as compared with their male counterparts (for a review, see Tsugawa et al., 2017). Striving to maintain higher standards at work—with greater adherence to evidence-based practices, for example, and greater thoughtfulness in working through complex problems—could plausibly be yet another source of everyday stress for these professional women.

The risks described thus far for physicians also extend to their NP and PA counterparts, who essentially function as physician extenders. With roles akin to those of physicians, they too show high risk for stress and burnout (Bakker, Le Blanc, & Schaufeli, 2005; Chang, Hancock, Johnson, Daly, & Jackson, 2005).

Accumulating stress can engender depression and also affect other adjustment domains. Physiologically, chronic stress can result in allostatic overload, as manifested in high levels of the stress hormone cortisol (Juster, McEwen, & Lupien, 2010; Karatsoreos & McEwen, 2011) and in other biomarkers such as elevated blood pressure, heart rate, atrophy of neurons in the brain, and excessive activity of inflammatory cytokines (McEwen, 2000). Similarly, there is ample evidence on the ill-effects of maternal stress and depression on parenting and on children's adjustment (Goodman & Garber, 2017; Luthar & Eisenberg, 2017).

The Need for Evidence-Based Interventions

Despite the serious ramifications of chronic stress among health care providers, there is little research on beneficial interventions (Shanafelt et al., 2012). An early study evaluated effects of a 1-year mindfulness curriculum on mood, empathy, and burnout (Krasner et al., 2009). Results showed increases in mindfulness and major outcomes, with gains sustained for 15 months. Given the absence of any comparison group, however, improvements could have been simply a result of additional free time (Wallace et al., 2009).

Another limitation of existing research-based interventions is that they have generally involved work with individual physicians (e.g., stress reduction) rather than efforts organized at the institutional level (Montgomery, 2014;Shanafelt et al., 2012). As almost one in two U.S. physicians has symptoms of burnout, this problem likely stems from the systems of care delivery, rather than from the vulnerability of a few individuals (Shanafelt et al., 2012). In fact, multisite research showed that high institutional commitment to physicians' well-being was related to reduced burnout, with gains sustained across 4 years (Dunn, Arnetz, Christensen, & Homer, 2007).

At the level of the organization, salient in reducing burnout is the quality of relationships with colleagues (McMurray et al., 1997). A study at the Mayo Clinic (West et al., 2014) tested the effectiveness of a program that involved 19 biweekly sessions over 9 months in a small group format, with protected time for all participants. The sample included 74 physicians. Intervention recipients showed more improvements than controls in depersonalization, emotional exhaustion, and work engagement, with gains sustained at 12 months. However, groups did not differ in changes in stress, depression, job satisfaction, or quality of life and did not specifically target physician mothers.

Burnout among Women

There is a critical need for interventions sensitive to the needs of health care providers who are women (DeCastro, Griffith, Ubel, Stewart, & Jagsi, 2014; Levine, Lin, Kern, Wright, & Carrese, 2011; Levinson, Kaufman, Clark, & Tolle, 1991), given the previously discussed heightened risks for depression, burnout, and ego depletion. Prominent reasons for women's premature departure from academic medicine are the lack of role models for combining career and family responsibilities, and negative perceptions of the research environment, including poor mentorship and high competition (Levine et al., 2011). Among clinician–researchers with career development awards, women were significantly less satisfied with the mentoring they received than were men (DeCastro et al., 2014); distressingly, both sexes perceived women mentors as less available and more controlling than men. These findings were interpreted as reflecting gender biases, wherein the same behaviors were judged more harshly among women (e.g., "controlling" rather than "assertive"; DeCastro et al., 2014). This is plausible, but an additional explanation is that the women mentors were more psychologically depleted given multiple caregiving responsibilities.

Authentic Connections Groups

The intervention tested in this study, called Authentic Connections Groups (ACG), was based on the structured Relational Psychotherapy Mothers' Groups (RPMG) program previously shown to be effective in two 5-year trials (Luthar & Suchman, 2000; Luthar, Suchman, & Altomare, 2007). Originally developed for low-income women at risk for parenting difficulties, RPMG encompasses 24 sessions for women facing multiple stressors (including single motherhood and mental illness). In this study, we pilot tested the 12-week version, the ACG program, expecting that this brief version would suffice for professional women with more overall resources.

Table 1
Authentic Connections Groups: Session Topics and Messages Subsumed

Session	Messages
1. Introduction	(After background and confidentiality) Who tends you, the caregiver?; authentic connections are vital for mothers' well-being; through these, there are benefits to work and parenting.
2. Minimizing rumination	When we feel stressed, we can ruminate and "pile" one concern after another; helpful strategies include thought-stopping, relaxation exercises, reaching out for support.
3. Children's pain and go-to committees	It's very hard to watch our children in pain; we all need "go-to committees."
4. Obstacles to connecting authentically	We each have our own reasons to avoid reaching out for help; explore these, and understand how they constrain closeness with others.
5. Anger/hurt	Behind anger is usually pain; it is important to express hurts clearly and directly, not indirectly through such behaviors as nagging or being critical.
6. Support wallets	Positive features of each woman are captured in messages written by each for all others; kept in "support wallets."
7. Assertiveness and mentorship at work	Women often have trouble asserting themselves when treated poorly; speak up; proactively support each other in the workplace.
8. "Good enough" mothering	Kids model what they see in our behaviors; share insights from sessions with them; in tough moments, we often "know" what we should do but can't because of depletion; get support.
9. Continuity after termination	Continuity of authentic connections is essential for us.
10. Shame versus self-compassion	Keep shaming, global negative self-attribution at bay; practice gentleness toward selves.
11. Limit-setting and affection	It's important to set developmentally appropriate limits; be consistent in enforcing; all children must have affection – conveyed directly.
12. Prioritize tending	Do stay connected!

The central goal underlying this intervention was to facilitate authentic, supportive relationships among mothers. Resilience research has established that the most important protective factor in helping at-risk mothers is the receipt of regular support (Luthar, 2015; Luthar & Eisenberg, 2017), especially from others facing similar circumstances. ACG meetings were based in respect, empathy, and empowerment, and were led by a skilled female group facilitator trained in the manualized procedures. Although there were clear topics and exercises, sessions were nondidactic in nature, based in guided discussions and role plays. Groups were open to mothers with children of all ages, which meant that health care providers who were both mentors and protégés could attend, with opportunities to relate in mutually supportive (as opposed to hierarchy-based) ways (see DeCastro, Sambuco, Ubel, Stewart, & Jagsi, 2013).

Material and Methods

This project was implemented as part of an initiative begun at the Mayo Clinic, AZ in 2015 to address burnout and turnover among female physicians. Email flyers were sent to women on staff inviting participation in a study on a support group for mothers—physicians, PhD's in clinical practice, NPs, and PAs—intended to minimize stress and to assess benefits of the relational group program. Inclusion required at least one child 18 years of age or younger. Based on a power analysis, we set out to include 40 women in the study; with this n and assuming $\alpha = 0.05$, power was 0.80 to detect an effect size of partial η^2 of 0.17, and 0.65 to detect η^2 of 0.12. All participants gave written informed consent approved by the Mayo Clinic institutional review board; all were given 1 hour per week protected time for 12 weeks to attend groups (ACG) or use as they chose (controls).

The first 40 eligible women were enrolled in the study. Participants were assigned randomly to the ACG intervention group ($n = 21$) or to the control group ($n = 19$) and at each assessment, all were emailed links to questionnaires to be completed on Qualtrics.

ACGs met for 1 hour per week across 3 months, led by a female psychiatrist (J.E.); session topics are outlined in Table 1. In addition to receiving training beforehand, weekly supervision meetings with the PI (SSL) were conducted to ensure fidelity to manual procedures; group participants also rated the clinician after the intervention to gauge fidelity. A total of five groups were conducted between February and November 2015 with five to seven women enrolled in each.

Measures

Participants were assessed at baseline, after the intervention, and at 3 months of follow-up using questionnaires used in prior research, along with measures of plasma cortisol (Cohen, 1988; Ussher et al., 2017). Alpha coefficients for questionnaires are noted at baseline (values were similar across assessments).

Psychosocial adjustment

Global symptoms and depression were measured by the Brief Symptom Index (Derogatis, 1992) and the Beck Depression Inventory (Beck & Beck, 1972), (α's of 0.91, 0.82). The Self-Compassion Scale (Neff, 2016) has 26 items (5-point scale; $\alpha = 0.88$), and feeling loved was assessed by four questions (7-point scale; $\alpha = 0.93$), for example, "I am seen and loved for the person I am, at my core." For physical affection, participants rated satisfaction on three items (5-point scale; $\alpha = 0.91$), for example, "How often do you get full, warm hugs from other adults?" The Parenting Stress Inventory (Abidin, 1990) has 36 items (5-point scale; $\alpha = 0.68$), for example, "My child makes more demands on me than most children."

The Maslach Burnout Inventory (Maslach & Jackson, 1986) has three subscales of which the first, emotional exhaustion, was central to our analyses ($\alpha = 0.93$; values were $\alpha = 0.86$ for depersonalization and $\alpha = 0.68$ for personal accomplishment).

Cortisol

We collected 10 mL of venous blood in serum separator tubes on site at the Mayo Clinic, Arizona and samples were shipped to the Mayo Clinic, Minnesota. Serum was separated, aliquoted and frozen at −80°C for eventual analysis with commercially available ELISA assays (Abcam Pty, Ltd.; Cambridge, MA). Each ELISA assay was performed in accordance with manufacturer's instructions and absorbencies were read at 450 nm.

Data Analyses

At the outset, we tested for differences between physicians or PhD ($n = 26$) and NP/PAs ($n = 14$) using t tests. For primary analyses testing for ACG effects on psychological variables, following patterns in prior intervention studies with similar designs (Gardner, Burton, & Klimes, 2006;Luthar & Suchman, 2000; Wolchik et al., 2002), we conducted ANCOVAs, partialling out baseline levels in comparing intervention and control groups a) after the intervention and b) at follow-up. In subsequent analyses, we conducted repeated measures ANOVAs, the other common approach in analyzing intervention data (Lieberman, Ippen, & Van Horn, 2006; Mackinnon, Griffiths, & Christensen, 2008). Of central interest here was the interaction effect, indicating whether changes over time were different in the intervention versus control group. Given the small sample size, effect sizes were of major interest in inferring potential benefits of ACG. Partial eta square values of 0.02, 0.13, and 0.26 are considered small, medium, and large effect sizes, respectively (Cohen, 1988).

To test for program effects on cortisol, we again followed approaches commonly used with small samples (Cohen, 1988; Ussher et al., 2017) testing for individual changes in plasma levels of cortisol, relative to baseline measures. Paired t tests were used at both post-treatment and follow-up.

Results

Mean ages of participants (SD) were 38.76 years (6.13) and 39.39 years (4.83) in the ACG and control conditions, respectively. With blinded random assignment, of the 21 intervention women, 17 were physicians, and 4 were NP/PAs; among the 19 control mothers, 8 were physicians, 1 was a PhD, and 10 were NP/PAs. Other than the difference in proportion of NP/PAs and physicians, the intervention and control groups did not differ in demographics, baseline adjustment or cortisol levels.

When comparing the physicians and PhD ($n = 26$) with NP/PAs ($n = 14$) on adjustment variables (27 total comparisons), differences were significant on two: NP/PAs had higher emotional exhaustion at baseline, $M = 38.71$ (6.53) versus $M = 38.29$ (7.51), $t(38) = 2.31$, $p = .03$; and after the intervention, $M = 29.96$ (13.25) versus $M = 27.92$ (13.80); $t(38) = 2.60$, $p = .01$. There were no differences on emotional exhaustion at follow-up. On the 24 comparisons involving the other eight psychological measures at three time points, differences were not significantly different, nor were levels of cortisol.

On psychological measures, one participant was missing data on parenting stress at follow-up. On biological measures, pregnancies and maternity leaves precluded draws from one woman throughout, and from two at the follow-up. An additional two could not schedule times to provide samples at follow-up, and two were statistical outliers and removed from the analysis (>2 SD from the mean). Thus, at baseline and after the intervention, there were 39 of 40 the women who had cortisol levels measured at baseline and after the intervention, and 35 of 40 at follow-up.

The 21 participants assigned to the ACG intervention attended a mean of 10.4 of 12 sessions (87%). Results of ANCOVAs, shown in the first two columns of Table 2, indicated that after the intervention group differences were significant on global symptoms and depression, with moderate effect sizes ($\eta_p^2 = 0.13$ and 0.11). At the 3-month follow-up, differences were statistically significant on all central outcomes except emotional exhaustion ($p = .09$), with most effect sizes moderate or larger ($\eta_p^2 = 0.08$–0.20; median, 0.16). As seen in mean scores displayed in Figure 1, differences became more pronounced between the post-treatment and follow-up assessments.

Table 2
Intervention and Control Group Means

	ANCOVA, After the Intervention			ANCOVA, 3-Month Follow-up			Repeated Measures ANOVA		
	F_{Gp}	p	η_p^2	F_{Gp}	p	η_p^2	$F_{GpxTime}$	p	η_p^2
Central constructs									
Global symptoms	***5.52***	***.02***	***.13***	***4.99***	***.03***	***.12***	***3.87***	***.03***	***.09***
Depression	***4.36***	***.04***	***.11***	***7.61***	***.01***	***.17***	***3.85***	***.03***	***.09***
Self-compassion	0.91	.35	.02	***7.10***	***.01***	***.16***	***4.28***	***.02***	***.10***
Feel loved	1.15	.29	.03	***9.23***	***.001***	***.20***	2.28	.11	.06
Being held – satisfaction	2.31	.14	.06	***8.77***	***.01***	***.19***	***3.90***	***.02***	***.09***
Parenting stress	0.44	.51	.01	***8.32***	***.01***	***.19***	***4.83***	***.01***	***.12***
Work: emotional exhaustion	0.76	.39	.02	**2.98**	**.09**	**.08**	**2.88**	**.06**	**.07**
Additional variables: work									
Personal accomplishment	1.07	.31	.03	***6.20***	***.02***	***.14***	0.80	.46	.02
Depersonalization	0.74	.39	.02	1.86	.18	.05	1.97	.15	.05

Note: *ns* Authentic Connections = 21; Control = 19. All effects significant at $p < .10$ are shown in boldface; those significant at $p < .05$ are italicized as well. Effect sizes, partial eta square: .02 ~ small, .13 ~ medium, .26 ~ large.

Results of repeated measures ANOVAs, shown in the third column of Table 2, were consistent, with significant Group × Time effects for five of the seven primary outcomes (Table 2). Again, significant effects were well above "small" ($\eta_p^2 = 0.02$), generally closer to the medium value of 0.13.

Cortisol

Paired t tests comparing change in individual cortisol levels (Figure 2) showed significant reductions from baseline to A) after treatment for the 19 ACG women (1 outlier excluded, $M \pm SEM = -14.89 \pm 7.775$ ng/mL), $t(18) = 1.916$, $p < .05$, and also B) to follow-up, with data on 15 women (2 outliers excluded, $M \pm SEM = -16.89 \pm 9.157$ ng/mL), $t(14) = 1.845$, $p < .05$. For the control group, paired t tests showed nonsignificant changes in both instances.

In additional analyses, we compared AC and controls on changes in cortisol levels. As shown in Figure 2 C, D, a trend toward significance was observed for mean individual differences between ACG and controls at after the intervention ($M \pm SEM = 16.59 \pm 10.40$ ng/mL), $t(37) = 1.596$, $p = .06$; and follow-up ($M \pm SEM = 14.59 \pm 10.02$ ng/mL), $t(31) = 1.457$, $p = .08$.

Clinician's adherence and treatment seeking

After treatment, ACG participants completed the clinician's Adherence Rating Scale (Luthar et al., 2007). As shown in Table 3, fidelity was high across all 11 items ($M = 4.61$). In addition, more than 25% of the ACG mothers (6 of 21) requested treatment referrals from the group facilitator for themselves or their children, and in all instances, they followed up on these.

Discussion

To our knowledge, this is the first randomized, controlled intervention for a group of professional women at high risk for stress and burnout—medical care professionals who are mothers—with measures of both behavioral and biological outcomes. Results provide strong initial support for the use of the relationally based 12-week intervention, Authentic Connections

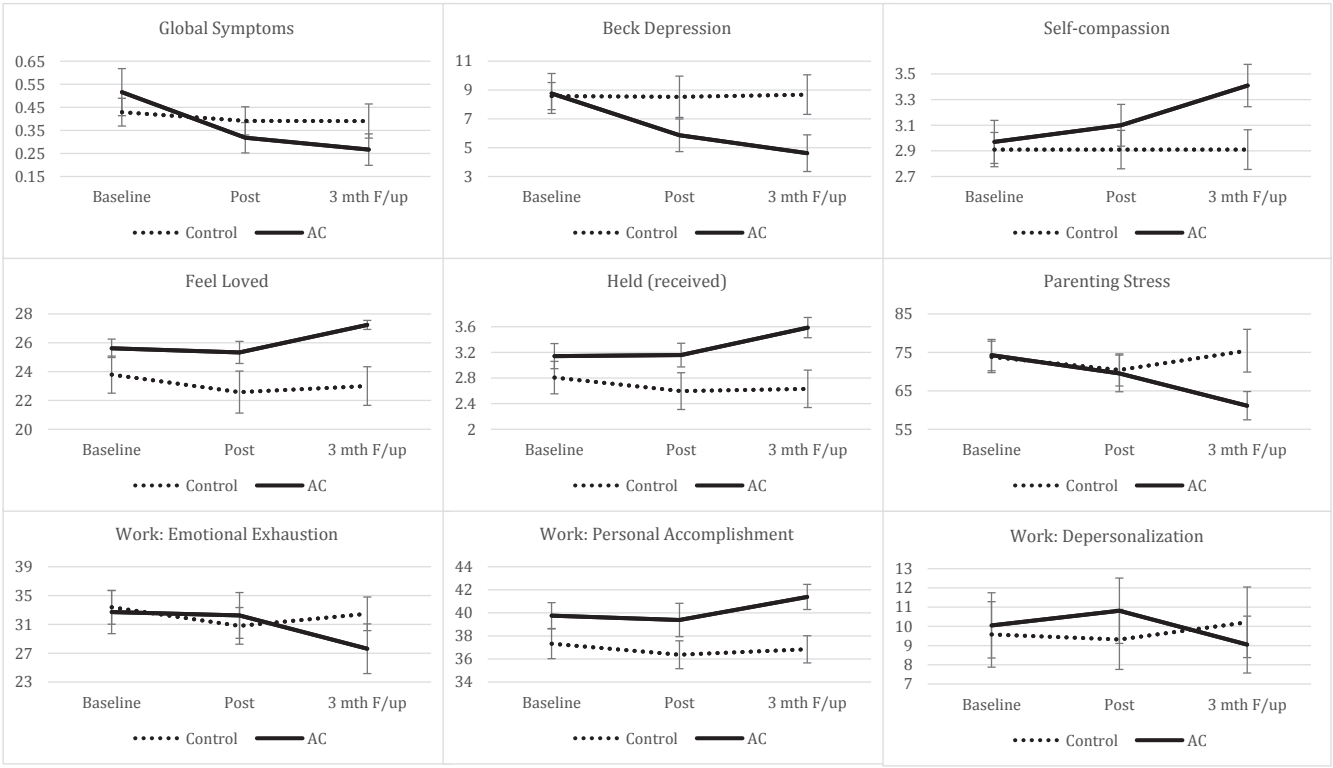

Figure 1. Group (treatment [AC], control) means at baseline, after treatment (Post), and the 3-month follow-up (3mth F/up).

Groups, with physicians, NPs, and PAs who are mothers. We found significant improvements among intervention versus control mothers across central psychological indices, with differences particularly pronounced 3 months after the program had ended. This incremental benefit over time resonates with the conceptual model wherein therapeutic effects are postulated to derive from strong relationships developed in women's everyday lives (Luthar, 2015; Luthar & Eisenberg, 2017). There was a deliberate focus, across meetings, on fostering honest, deep exchanges with their "go-to committees" (friends or family) so that, by the end of the 3 months, these connections became increasingly crystallized.

In terms of specific domains in which we documented improvements, perhaps the most noteworthy were those on mothers' depression, global distress symptoms, and parenting stress. Improvements in these domains are propitious not just for the women themselves but also for their children (Goodman & Garber, 2017; Luthar, Barkin, & Crossman, 2013). Also notable were trends of improvements in levels of the stress hormone, cortisol.

Qualitative data were consistent. Over 3 months after their last group session, women spoke of having developed "a secret 'sisterhood' here at work" and "a safe and comforting place to share things we're all going through." The shift from a focus on negatives was welcome: "I was so tired of hearing about how difficult and stressful our work was. Now, when I bump into someone from my group, we smile and give each other a real (or mental) hug; our groups help us women to connect around in a very positive way."

Our findings extend efforts made by West et al. (2014) to reduce distress among physicians. Their program involved 19 biweekly discussions groups incorporating mindfulness and shared experience across 9 months. At after the intervention, no group differences were found. At both the 3- and 12-month follow-ups, however, two of the eight central outcome variables—empowerment at work and low depersonalization—showed significant gains in the intervention versus controls. In terms of mechanisms of improvement, it is pertinent to note that the West et al. (2014) intervention had also occurred in small groups, so that enhanced communication among group members in the work setting could have become an active ingredient. Several studies have demonstrated the benefits of support among coworkers and positive relationships between physicians and nurses, along with leadership characterized by transparency and consistency (Laschinger & Fida, 2014).

With regard to participation, our results compare well with past work involving physicians. To illustrate, in the by study West et al. (2014), the participants attended a mean of 11.7 of 19 small group sessions (62%). In this study, for the ACG women, mean attendance was 10.4 of the 12 sessions (87%). Remarkably, there were no dropouts from the ACG intervention (freed time did not, of course, imply that attendance was mandatory).

The importance of our results is further underscored by the fact that physicians are often reluctant to seek assistance for depression partly because of associated stigma (Carroll, 2016); depression could be potentially reduced via participation in a non-stigmatized, supportive group in the workplace. Notably, more than one-quarter of the mothers (6 of 21) requested treatment referrals from the facilitator for personal or children's difficulties, and all followed up on these. (Unfortunately, we do not have information on treatment seeking by control group members; however, the facilitator noted that requests for referrals seemed to be prompted by group discussions, with some mothers specifically citing decreased shame around help-

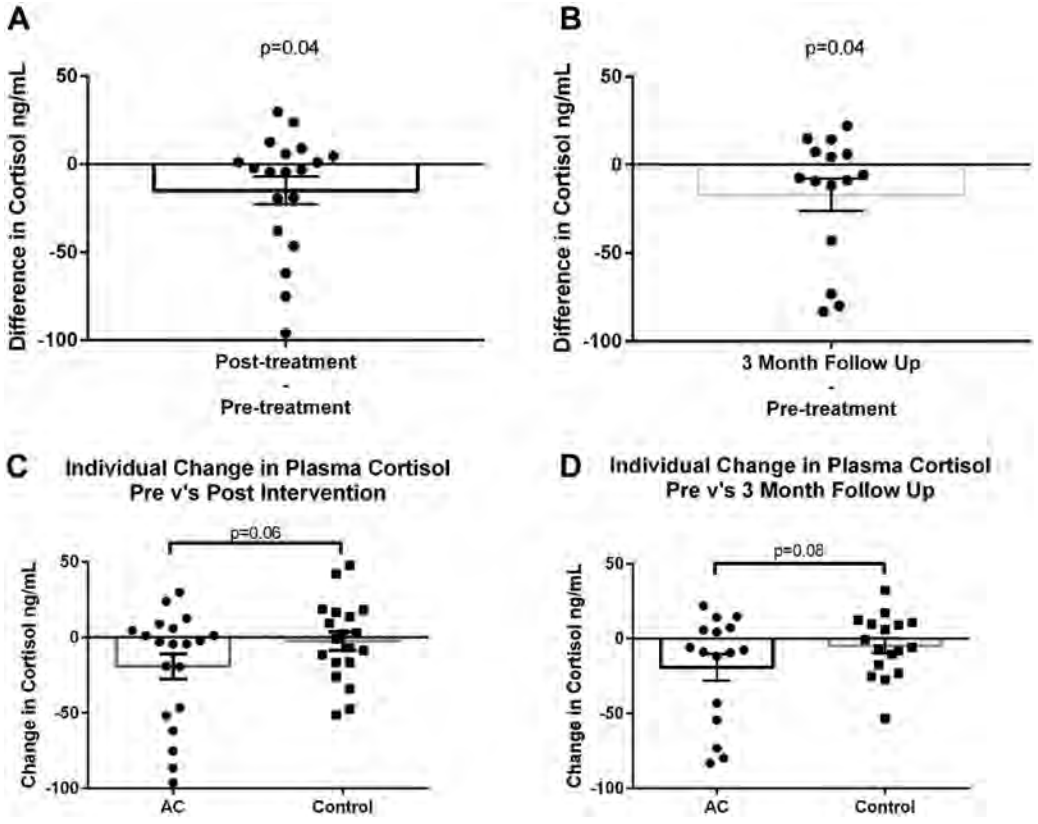

Figure 2. Reductions in individual plasma cortisol concentrations in Authentic Connections Group (ACG) from baseline to after the intervention (**A**) and to the 3-month follow-up (**B**). Changes among ACG versus controls from baseline to after the intervention (**C**) and to the 3-month follow-up (**D**). Negative values represent reductions in cortisol levels.

seeking.) Equally encouraging were improvements on other indices critical in fostering women's resilience, including feeling loved and comforted (Luthar & Ciciolla, 2015) and self-compassion (Neff, 2016); these are novel dimensions in studying medical professionals, who are generally appraised in terms of the care they provided others and not the tending they themselves receive. As Shanafelt et al. (2012) argued, health care organizations must address the problem of physician burnout proactively, with preventive interventions, at the organizational level.

Table 3
Clinician's Adherence Rating Scale

Dimension	Mean (SD)
Conveys warmth and interest toward group members.	4.81 (0.68)
Focuses on developing new understanding of relationships and their impact on self and others.	4.71 (0.72)
Uses exploratory, discovery-oriented approach to guide members' resolution of issues.	4.48 (0.93)
Focuses on self-esteem building, stress reduction, self-support, or other aspects of psychological needs.	4.67 (0.80)
Openness and flexibility to incorporating participants' discussion into the group topic.	4.62 (0.74)
Focuses discussion on helping develop women's parenting skills, knowledge, and/or awareness.	4.29 (1.10)
Makes own ideas and experience available to the group in a way that fosters progress.	4.62 (0.92)
Actively encourages and reinforces participants' attempts to assimilate new ideas and insights.	4.57 (0.98)
Reflects participants' feelings and personal meanings to show an understanding of their experience.	4.62 (0.92)
Encourages group members to speak directly to and support each other.	4.67 (0.91)
Effectively summarizes the essence of the discussion before moving to a new topic.	4.62 (0.92)

Note: All 21 women in the intervention condition responded to each question. The range of scores was 1–5.

This study was limited by a small sample size, yet this very factor renders our findings more compelling, because almost all outcomes showed statistically significant gains in ACG mothers versus controls. Large samples enable detection of statistical significance even when the magnitude of differences is small. In this study, most findings had effect sizes in the moderate range.

Our study was also limited by the relatively short follow-up period; in future work, it would be useful to examine effects over a year or more. Future work should also evaluate the use of booster sessions to maintain the gains, and possibly include a third group with no released time in the design to ascertain any improvements owing to naturally occurring changes, rather than those deriving from weekly freed time or any intervention. Additionally, it will be important to examine generalizability by using group facilitators from different backgrounds (e.g., psychologists or social workers), and with large enough samples to illuminate intervention effects across groups differing on a) demographics, including marital status, ethnicity, and income, b) professional status or years of seniority, c) the number and ages of children, d) quality of child care, e) other life stressors, such as caring for aging parents, and f) size of organization (that could affect concerns about anonymity, for example).

With regard to outcomes assessed in future research, it will be important to include additional biomarkers of allostatic load,

including those capturing immune and brain functioning, as well as diverse measures of stress hormones. It must be acknowledged, further, that the present findings preclude conclusions on the clinical significance of the biological changes that we documented, given limitations in our measurement of cortisol. Because it was difficult to get all participants at the same time of day for blood draws, we kept the sample collection times consistent for each participant across the three assessments (e.g., 8:00 AM at baseline, after the intervention, and follow-up for participant A; 2:00 PM at all three assessments for participant B), so that within-person differences were considered to be unaffected by time of day. This within-person consistency notwithstanding, we relied on single rather than multiple samples across different times of the day as would have been optimal given diurnal variations, and we considered cortisol levels via just plasma and not salivary or urinary samples as well (see Adam & Kumari, 2009; Cohen et al., 2006; Kumari, Shipley, Stafford, & Kivimaki, 2011). Additionally, hypercortisolism is generally associated with acute or short-term stress, but there are some suggestions that chronic stress can be linked with low rather than high cortisol levels (Edwards, Cahalan, Mensing, Smith, & Haythornthwaite, 2011; Heim, Ehlert, & Hellhammer, 2000). Collectively, these factors render it important to include diverse biomarkers among outcomes assessed in future studies evaluating the ACG program.

Implications for Practice and/or Policy

Resilience research has established that when mothers are under high stress, they must receive ongoing "tending" themselves to foster their own well-being and, in turn, positive parenting behaviors and healthy adaptation of their children, with such interpersonal supports integrated in their everyday life settings (Goodman & Garber, 2017; Knitzer, 2000; Luthar & Eisenberg, 2017). Results of this study support the value of using relationally based supportive group interventions in this regard. Previous research has documented the benefits of using relational programs with low-income mothers, within their community settings such as health care facilities (Luthar et al., 2007; Toth, Gravener-Davis, Guild, & Cicchetti, 2013) and here, we document benefits in a very different, but also vulnerable, demographic of mothers. There is growing evidence that well-educated mothers are a group stretched thin with greater increases documented, in survey panel data over time, in the number of hours spent on children's care and activities as compared to both well-educated fathers and less educated mothers (see Kalil, Ryan, & Corey, 2012; Lareau & Weininger, 2008; Ramey & Ramey, 2010; Yavorsky, Dush, & Schoppe-Sullivan, 2015). Also documented among well-educated professional mothers are higher demands than fathers for multitasking across demands from home and work, with associated exacerbation of stress and distress (Offer, 2014; Offer & Schneider, 2011; Musick, Meier, & Flood, 2016).

Recognizing the high costs of workers' stress and depression, American companies and businesses are increasingly implementing programs to foster employees' well-being (American Psychological Association, 2014; Frakt & Carroll, 2014). Workplace stress cause additional expenditures of between $125 to $190 billion dollars a year—representing 5% to 8% of national expenses on health care—with high demands at work being the greatest factor in these costs, responsible for about $48 billion (Goh, Pfeffer, & Zenios, 2016). Although it is beyond the scope of this study to provide precise cost–benefit figures, the expenses for the ACG program (payment for training/supervision of the group facilitator, her time conducting groups, and the lost revenue from 12 hours of freed time) are miniscule compared with the potentially averted losses from stress-related absenteeism, impaired performance at work, and job turnover among these highly trained and skilled professionals.

In the years ahead, rigorous data on this relatively low-cost, manualized intervention could help to identify it as a model for women working in medical care and other high-stress settings. With appropriate replications, the ACG program could be disseminated across the country toward addressing what is increasingly exhorted for retaining women in the workplace, that is to try and "fix the environment" toward fostering resilience (Luthar & Eisenberg, 2017), rather than simply trying to "fix the women" in challenging professional milieus such as academic medicine (Laschinger & Fida, 2014; Montgomery, 2014). Also useful in the future will be explorations of using this approach with groups other than mothers, including women in male-dominated disciplines (e.g., science, technology, engineering and mathematics or "STEM", see Beasley & Fisher, 2012; Chesler & Chesler, 2002; Sandberg, 2013), and even to fathers and men who seek supportive, interpersonal interventions.

Conclusion

In a recent statement, the U.S. Surgeon General emphasized that efforts to promote the well-being of health providers must become a major priority at the organizational level (Frieden, 2016). This randomized, controlled study showed that facilitated colleague support groups were associated with improvements across psychological adjustment indices as well as biological measures of distress. The ACG program may, therefore, be a viable preventive intervention to mitigate burnout and stress among professional women who work as physicians, NPs, and PAs, even as they negotiate the considerable demands and challenges that come with their roles as mothers.

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Appendix I

If Every Fifth Physician Is Affected by Burnout, What About the Other Four? Resilience Strategies of Experienced Physicians

Julika Zwack, PhD, and Jochen Schweitzer, PhD

Abstract

Purpose
To identify health-promoting strategies employed by experienced physicians in order to define prototypical resilience processes and key aspects of resilience-fostering preventive actions.

Method
From January 2010 to March 2011, the authors conducted 200 semistructured interviews with physicians of different ages, disciplines, and hierarchical status from across Germany. The interview transcripts were analyzed according to the Content Analysis method.

Results
Analysis revealed 30 subcodes in three dimensions: (1) job-related gratifications derived from treatment interactions, (2) practices, such as leisure-time activities, self-demarcation, limitation of working hours, and continuous professional development, and (3) attitudes, such as acceptance of professional and personal boundaries, a focus on positive aspects of work, and personal reflexivity.

Conclusions
The reported strategies and attitudes helped to develop mental, physical, and social resource pools that fostered effective decision making. Successful coping, in turn, encouraged the maintenance of resilience-promoting abilities. In relation to Conservation of Resources Theory, physician resilience emerged as the ability to invest personal resources in a way that initiates positive resource spirals in spite of stressful working conditions. Enriching traditional stress management approaches with the dynamic of positive as well as negative resource spirals would thus appear to be a promising approach.

Editor's Note: A commentary by R.M. Epstein and M.S. Krasner appears on page 301.

Physicians' health matters, not only to the physicians themselves but also to their patients. Mental health is an important component of overall health, and research shows that approximately 15% to 20% of physicians will have mental health problems at some point in their careers.[1–3] In spite of a lack of sound prospective studies on the topic, available studies suggest that burnout levels are high among residents and may be associated with depression and problematic patient care.[4,5]

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In a survey by Cohen and colleagues,[6] one-third of 1,999 residents reported their life as "quite a bit" to "extremely" stressful. In their review of 40 studies on psychological distress in medical students (depression, anxiety, burnout, and related mental health problems), Dyrbye and colleagues[7] consistently identified a greater degree of depression and anxiety in medical students in the later years of training compared with the nonstudent (general) population. Similarly, Goebert and colleagues[8] found prevalence rates of 12% for major depression and 9.2% for mild/moderate depression in 2,000 medical students and residents. Others have shown that this trend is accompanied in the course of the four years of medical training by an increase in cynicism, an erosion of humanitarian attitudes, and a decline in empathy.[4,7,9] Although depression rates tend to decline in later years, suicide remains one of the major causes of early death in practicing physicians, the male-physician suicide rate being 1.4 times higher and the female-physician rate 2.3 times higher than in the average population.[10]

These alarming data on physician distress have fostered awareness for the necessity of prevention. One common preventive strategy is the traditional Balint group model (named for Hungarian psychoanalyst Michael Balint) in which a group of physicians meet regularly and present clinical cases to better understand the physician–patient relationship. Two additional conceptual approaches seem to prevail: (1) mindfulness-based stress reduction, a training program focusing on meditation techniques that promote relaxation through the nonjudgmental awareness of moment-to-moment sensations, experiences, and reactions, and (2) cognitive behavioral stress prevention with a focus on psycho-education about physical and cognitive components of the stress reaction, relaxation techniques such as progressive muscle relaxation, and cognitive interventions (e.g., challenging irrational and negative thoughts). Mindfulness-based stress reduction has frequently proved effective for reducing distress, rumination, and negative feelings and enhancing the capacity for empathy.[11,12] Cognitive behavioral approaches reported a similarly significant effect on job-related distress and general well-being.[13,14]

Although some effort has been put into epidemiological surveys on physicians'

health, less information is available on physician resilience.[15–18] If approximately every fifth physician is affected by burnout or other stress-related disorders,[1–3] what about the other four? How do they deal with the challenges, strains, and restrictions of their professional lives? Studies of resilience available so far are based on very small samples and restricted to few disciplines. Jensen and colleagues,[15] for example, conducted in-depth interviews with 17 family practitioners. They identified four main aspects of physician resilience: (1) attitudes and perspectives, which include valuing the physician role, maintaining interest, developing self-awareness, and accepting personal limitations, (2) balance and prioritization, which include setting limits, taking effective approaches to continuing professional development, and honoring the self, (3) practice management style, which includes sound business management, having good staff, and using effective practice arrangements, and (4) supportive relations, which include positive personal relationships, effective professional relationships, and good communication. Stevenson and colleagues[17] also conducted semistructured interviews with 15 primary health care practitioners. Their study highlights the importance of respect and appreciation toward patients and an intellectual engagement with the work itself. Further, they demonstrated that resilient physicians recognize and celebrate small gains and show the ability to control their working hours.[17] The cross-sectional survey of Keeton and colleagues[19] confirms the latter: Having some control over schedule and hours worked was the strongest predictor of work–life balance and burnout.

In our study, we also used a qualitative, bottom-up approach to identify resilience strategies, but we considerably broadened the sample, interviewing 200 physicians of different ages, specialties, and hierarchical status. In a second step, we have conceptualized the reported strategies in terms of the resilience process underlying them.

Method

The research team consisted of the two authors, five medical students, and one postgraduate psychologist. To ensure homogeneity of interviewing, each member of the research team first accompanied the first author (J.Z.) for three interviews. Then, each team member conducted three individual interviews, which were supervised post hoc using the audio tapes. Once team members had completed this process, they conducted their remaining interviews without additional supervision. Altogether, the research team conducted 200 semistructured interviews with residents (employed junior physicians working on hospital wards), assistant medical directors, and registered doctors (self-employed physicians in the ambulant field). Participation was based on physicians' interest to share and pass on their own experiences; there was no further incentive.

Recruitment of participants

Recruiting followed a pyramid approach. Because motivation to share personal insights and experiences represented the key precondition for participation in the study, we used a convenience sample but made sure to integrate a broad range of specialties, ages, hierarchical status, and settings. We started recruiting at the University Hospital Heidelberg by contacting physicians of different disciplines and hierarchical status (residents, assistant medical directors, and registered doctors) known by members of the research team. We further contacted self-employed physicians by information letters followed by phone calls. Contact information for these physicians was obtained from the telephone book. During the research process, we extended our regional focus to eight other cities all over Germany. At the end of each interview, we asked for a recommendation of a colleague ("Do you know someone who could be interested in sharing his or her experiences and insights with us?"). Following this snowball approach, we managed to recruit a diversified pool of interview participants. The institutional review board of the University of Heidelberg reviewed and approved this study.

First, we conducted 83 interviews across 21 disciplines. Unexpectedly, reported resilience strategies differed little across specialties. To find out whether this was due to the low numbers of participants per specialty, we decided to focus further data collection on three specialties, whose professional day-to-day routines differed substantially. Thus, in a second phase we conducted interviews with 117 physicians working as psychiatrists, surgeons, and general practitioners. To work out potential differences, we explicitly asked for specialty-specific stressors and coping strategies within each discipline. Altogether, the research team interviewed 51 general practitioners, 38 psychiatrists, 45 surgeons, and 66 physicians from other disciplines.

Data collection

For screening purposes, all physicians completed a German-language paper version of the Maslach Burnout Inventory (MBI) at the beginning of the qualitative interview. The MBI assesses the frequency of symptoms referring to three subdimensions (Emotional Exhaustion, Depersonalization, Personal Accomplishment) on a six-point scale: 1 = "never," 2 = "seldom," 3 = "sometimes," 4 = "often," 5 = "frequent," and 6 = "very often."[20,21] Filling in the 22 items takes about five minutes. Whereas for Emotional Exhaustion and Depersonalization, higher scores indicate higher levels of burnout, Personal Accomplishment is reverse-scored, with high scores indicating more personal efficacy.

The field manual (see Appendix 1) was developed by J.Z. and focuses on the main research question: Which strategies do you apply to deal with the stressors of your professional life? The field manual was developed and communicatively validated through 10 trial interviews conducted between October and December 2009. Half of the trial interviews were with self-employed doctors, half with hospital-employed doctors; the trial sample included four female and six male doctors belonging to four different disciplines. Each interview closed with a summary by the interviewer and two questions: "Are these the most important resilience strategies in your professional life?" and "Is there anything else we should have asked?"

The recruiting and data collection period extended from January 2010 to March 2011. To activate a broad range of resilience strategies, interviewers framed the main research question from different perspectives (e.g., strategies found with colleagues, advice one would give to a medical student). Interviewers encouraged participants to give examples for all

strategies reported. The average interview duration was 42 minutes (range = 18 minutes to 2:08 hours; standard deviation = 19 minutes). All interviews were audio-taped and transcribed in their entirety and analyzed in accordance with the Content Analysis method.[22,23]

Analysis of the data

Preliminary data analysis followed categories derived from the main research questions. To restrict distortions due to social desirability, we only coded mental as well as behavioral strategies that could be illustrated ("the way I do this …"). We differentiated between "general sources of gratification," "behavioral routines and practices," and useful "attitudes and mental strategies." Building on these core dimensions, we inductively educed subcategories. For this purpose, we first grouped interview statements according to the three core dimensions. Second, we identified and marked key themes within each dimension. Building on these key themes, we developed a preliminary system of subcategories. All interview statements were assigned to this category system. To ensure a high reliability of assignments, we conducted trials by four independent coders and worked over category definitions until we reached an average accordance of at least 80%. For 10% of the data (20 interview records), two independent coders tested category reliability with Cohen kappa ranging from 0.74 to 0.91.

Results

Participant characteristics are summarized in Table 1. Thirty-eight percent of the sample (n = 76) were self-employed. The hospital-employed physicians (n = 124) included 55% residents (n = 68), 2% scientists (n = 2), 28% assistant medical directors (n = 35), and 15% head physicians (n = 19).

Analyses of the MBI revealed that, in line with the research focus, the physicians interviewed reported low levels of Emotional Exhaustion ($\bar{X}$= 2.38; sd=0.8) and Depersonalization ($\bar{X}$ = 2.03; sd=0.66) and high levels of Personal Accomplishment ($\bar{X}$ = 4.76; sd = 0.71).

The following sections reveal the themes and subcategories that emerged from our analyses of the three dimensions of general sources of gratification, behavioral routines and practices, and attitudes and mental strategies. For context, we specify the role, affiliation, and age of the speaker in parentheses after each quotation in this section. For a survey of all resilience strategies and a comparison between different disciplines, see Table 2.

Table 1

Demographic Characteristics of 200 German Physicians Participating in Semistructured Interviews About Resilience Strategies, 2010–2011

Characteristic	Total sample (n = 200)	Males (n = 134)	Females (n = 66)
Average age in years*	42.5	46	39
No. of children*	1.2	1.7	0.8
Professional experience in years*	14.5	18	11
Married, no. (%)	146 (73)	105 (78)	41 (63)
Divorced, no. (%)	16 (8)	9 (7)	7 (10)
Single, no. (%)	38 (19)	21 (16)	17 (27)
Self-employed, no. (%)	76 (38)	55 (41)	21 (31)
Hospital-employed, no. (%)	124 (62)	80 (60)	44 (69)

* Significant difference ($P < .05$) between groups. Chi-squared testing for marital status and professional setting did not reveal significant differences between male and female physicians ($P > .05$).

Job-related sources of gratification

Comments in this category discussed participants' sources of strength, meaning, and energy in routine professional life. Two main sources emerged.

Gratification from the doctor–patient relationship. Experiences of efficacy in the immediate doctor–patient relationship represented a crucial aspect of professional activity. Showing interest in the "person behind the symptoms" (general practitioner, own practice, 57) was one decisive factor protecting participants against monotony. Participants noted the importance of the feeling of being someone whose opinion counts, someone who is "given a part to play when there are vital decisions to make" (neurosurgeon, own practice, 47). Success in establishing good relations between doctor and patient is often reflected in the patients' appreciation and gratitude, which was another recurrent source of strength reported by participants.

Finally, participants' comments illustrated that encounters with patients deliver occasions for self-reflection. With the patient as a mirror, the physician's own problems could be more clearly perceived and at the same time put into perspective.

Gratification from medical efficacy. The experience of meaningful professional activity was typically conditioned by symptom-related before-and-after comparisons.

> What I still derive energy from is the experience of success, of healing.… Many of the patients we discharge have fully regained their health. They've had their appendix, their gallbladder, or a tumor removed—whatever. They are completely cured (senior hospital surgeon, general and visceral, 39).

The responding physicians considered complex diagnostic issues as intellectual challenges that helped them to enhance their professional stature. They consciously perceived treatment successes both large and small as such, and these successes represented a source of professional satisfaction even in cases that required routine skills only. Self-discipline in connection with diagnosis and information for the patient was a significant factor in gratification, notably in connection with routine measures, as it ensured the prevention of complications and (subjectively) unforgivable errors.

Resilience practices

What do physicians do to ensure that their profession remains satisfying and fulfilling? Comments related to the second dimension addressed this question and discussed the practices that help physicians deal with the many stress factors involved in their profession.

Leisure-time activity to reduce stress. Participants used leisure activities in general to relieve stress, but closer inspection indicates that these activities fulfill a number of different functions. Sporting activity was mostly an immediate way of reducing tension

Table 2

Resilience Strategies and Their Frequency According to Discipline as Reported in 200 Semistructured Interviews With German Physicians, 2010–2011

	Theme	Whole sample (n = 200)	General practitioners (n = 51)	Psychiatrists (n = 38)	Surgeons (n = 45)	Other disciplines (n = 66)
Job-related sources of gratification						
1	Gratification from doctor–patient relationship	134 (67)	38 (75)	28 (74)	19 (42)	49 (74)
2	Gratification from medical efficacy	118 (59)	16 (31)	17 (45)	39 (87)	44 (67)
Resilience strategies 1: Practices and routines						
3	Leisure-time activity	158 (79)	42 (82)	33 (88)	31 (69)	52 (79)
4	Quest for and cultivation of contact with colleagues	110 (55)	26 (51)	26 (69)	27 (60)	31 (47)
5	Cultivation of relations with family and friends	102 (51)	25 (49)	25 (66)	27 (60)	25 (38)
6	Proactive engagement with the limits of one's own skills, complications that crop up and treatment errors when communicating with colleagues and disciplinarians	88 (44)	20 (39)	16 (42)	16 (36)	36 (55)
7	Proactive engagement with the limits of one's own skills, complications that crop up and treatment errors when communicating with patients	80 (40)	19 (37)	6 (16)	20 (44)	37 (56)
8	Personal reflection and goal setting	80 (40)	23 (45)	13 (34)	21 (47)	23 (35)
9	Self-demarcation with patients	80 (40)	28 (54)	16 (42)	14 (31)	22 (33)
10	Talking about job-related stress with private relations	76 (38)	17 (33)	12 (32)	9 (20)	38 (58)
11	Self-organization with bureaucracy and regular chores	72 (36)	21 (41)	16 (42)	14 (31)	21 (32)
12	Self-demarcation with colleagues and disciplinarians	68 (34)	8 (16)	22 (58)	19 (42)	19 (29)
13	Cultivation of one's own professionalism	64 (32)	19 (38)	18 (47)	12 (27)	15 (23)
14	Limitation of working hours	62 (31)	13 (25)	14 (37)	14 (31)	21 (32)
15	Error management	54 (27)	13 (25)	5 (13)	10 (22)	26 (39)
16	Ritualized time-out periods	52 (26)	18 (35)	9 (24)	7 (16)	18 (27)
17	Institutionalized exchange forums (i.e., quality circles or Balint groups)	40 (20)	20 (40)	9 (24)	2 (4)	9 (14)
18	Supervision, coaching, psychotherapy	30 (15)	9 (18)	9 (24)	6 (13)	6 (9)
19	Long-time, nonprofessional fields of interest	28 (14)	14 (27)	3 (8)	3 (7)	8 (12)
20	Self-discipline in connection with diagnosis and information	24 (12)	5 (10)	4 (11)	3 (7)	12 (18)
21	Prioritization of basic needs	24 (12)	4 (8)	2 (5)	10 (22)	8 (12)
22	Spirituality	18 (9)	5 (10)	8 (21)	3 (7)	2 (3)
Resilience strategies 2: Useful attitudes						
23	Acceptance and realism	112 (56)	28 (55)	25 (66)	20 (44)	39 (59)
24	Self-awareness and reflexivity	106 (53)	44 (86)	12 (32)	22 (49)	28 (42)
25	Active engagement with the downside(s) of the medical profession	94 (47)	32 (63)	21 (55)	17 (37)	24 (36)
26	Accepting personal boundaries	88 (44)	34 (67)	21 (55)	9 (20)	24 (36)
27	Recognizing when change is necessary	66 (33)	13 (25)	21 (55)	13 (29)	19 (29)
28	Creating inner distance by taking an observer perspective	48 (24)	8 (16)	9 (24)	18 (40)	13 (20)
29	Appreciating the good things	48 (24)	18 (35)	11 (29)	10 (22)	9 (14)
30	Interest in the person behind the symptom	36 (18)	10 (19)	6 (15)	9 (20)	11 (17)

(e.g., "freeing myself physically") and facilitated a change of mental focus:

> Today I play golf, like every Wednesday. It's an anchor for me. All the problems I have are whittled down to one single problem: how to hit the ball. And that lasts four hours (general practitioner, 54).

Alongside physical activity, participants engaged in cultural matters (music, literature, art) to extend horizons and put professional concerns into perspective. Cultural activities were also a rich source of aesthetic pleasure and harmony. As one participant noted:

> You need something you can steep yourself in. For me music is that kind of thing, it has to do with ideal beauty. Even when things are not going too well otherwise, it takes me out of myself (psychiatrist/neurologist, own practice, 58).

For some respondents, compensatory activity transcended the limits of a mere hobby. These individuals reported that long-time nonprofessional fields of interest provided a "second leg to stand on" (gynecologist, 53) and frequently called for the investment of substantial time resources.

Through the experiences of success that they enabled, compensatory activities contributed much to participants' feelings of inner freedom. Respondents did not simply pursue hobbies when they had time to do so. Rather, they made sure to find the time they needed to pursue the hobbies that were important to them.

Quest for and cultivation of contact with colleagues. The exchange of views and experiences with colleagues was the central resource for reduction of professional insecurity.

> What I always say is, if something's not going well, call the colleagues who sent the patient to you and discuss the matter with them. This way you can build up a network that maybe takes up some of your time but also makes your name familiar and gives you a tremendous degree of human security in your work as a physician (head physician, cardiology department, 59).

Feedback from colleagues was also seen as a source of, and an incentive for, enhanced professional knowledge and expertise at the routine level. Exchanges with colleagues served as a direct way of reducing emotional pressure caused by participants' own fallibility and inadequacies in dealing with difficult patients and complex medical issues.

> Things that help me stay healthy? The friendships and professional alliances that one enters into. Cultivating a network means sowing the seed and seeing that in some places it bears fruit and in others it doesn't. Strategically, the best bet is perhaps to sow the seed as widely as possible, in other words to go in search of contacts (neurosurgeon, own practice, 47).

Participants revealed efforts toward conscious decisions made in a spirit of fairness (i.e., with regard to payment, distribution of night shifts, and extra work), friendly gestures, and mutual support. One in five respondents also made use of institutionalized exchange forums like quality circles or Balint groups.

Cultivation of relations with family and friends. Reliable family relations and friendships represented an oasis of stability and understanding. They provided relaxation through a change of focus and were beneficial for putting things in perspective.

> When my children say, "Mummy, you're hardly ever home these days," I know things are not as they should be. When I really am home and we do something together, I know that I can only communicate properly if I have reserves of strength. Whenever I'm on my last legs, I lose my bearings—at work as well (senior physician, oncology department, 52).

Physicians also found it helpful to have relationships with people who are prepared to bring them "down to earth" when necessary.

> It's important to find the right balance between self-overestimation and a lack of self-confidence. You need an environment of family and friends who will tell you when you start behaving badly. My wife is my severest critic (general practitioner, 59).

The cultivation of these relations normally took place in the framework of ritualized contexts (e.g., going shopping together, sporting activities, lunch with the family, weekly meetings with friends in the local pub) and via conscious presence (e.g., "When I'm home, I'm not anywhere else").

Proactive engagement with the limits of skills, complications, and treatment errors. Participants recommended owning up to uncertainties about how to proceed and not trying to conceal errors one has committed. Recommendations for addressing these challenges ranged from spontaneous phone calls between colleagues to informal inquiries at lunch with fellow physicians to regular, established quality circles or explicit error management meetings openly addressing misgivings about treatment decisions, actual errors, or unanswered questions. Participants' comments supported the notion that physicians accustomed to communicating uncertainties and complications openly and proactively enhance both their emotional and professional security by doing so. Also, the feeling of having learned from one's mistakes or enhancing patient security by frankly addressing such problems made it easier for many physicians to move on after an adverse event and not to agonize fruitlessly over any complications and mishaps for which they were partly or entirely to blame.

Personal reflection. Consciously and regularly taking time out to reflect on one's personal situation in its entirety was another health-promoting strategy.

> I regularly ask myself questions like: Where am I right now? Where do I want to go? What do I find uncongenial? Why am I dissatisfied? What can I do to change that? Another good idea is to do this at a particular time. Ask yourself: Where were the perks last year? Where are they this year? (senior dentist, maxillary surgery department, 47).

For many physicians, the motives for attempting to define one's own situation and to change track in the near future (e.g., cutting down on working hours, changing jobs or specializing in a different sector, cultivating extraprofessional resources) were perceptible physical repercussions, feelings of general disinclination, or obstinate doubts about how meaningful their lives were.

Self-demarcation. Physicians' ability to maintain clearly defined boundaries between themselves and their patients and to draw a clear line between themselves and their colleagues/superiors was considered essential by many respondents. These lines of demarcation could be professional (e.g., "What do I stand for professionally and what do I reject?"), temporal (e.g., "I refuse to be available at all times"), or personal (e.g., "Who do I agree to associate with and who not?"). The conscious management of proximity and distance in the patient–doctor relationship was prophylactic and relieving in various ways. Refusal to collude with unrealistic expectations about healing prospects and the provision of assistance prevented disappointments and accusations from the patient. Participants also drew conscious demarcation lines out of loyalty to individual professional standards. As such, they served to protect professional identity and encourage a feeling of self-worth. The clear definition of boundaries helped physicians with a practice of their own to enhance their professional profile and attract a body of patients with whom they had a higher degree of affinity. This increased the likelihood of opportunities for experiences of efficacy in the doctor–patient relationship. Accordingly, reliable demarcation mechanisms emerged as one of the basic prerequisites for resilient, long-term doctor–patient relationships, in accordance with the motto "demarcation is better than disillusion."

When dealing with boundary-violating patients, participants recommended assuming an observer position and

looking at the situation with inner detachment:

> I look at things from the outside and never lose my composure. My motto is, All right, I might let this really annoy me, but then again I might not (assistant physician, dentistry department, 27).

Cultivation of one's own professionalism. Continuing education, reading medical literature, or attending quality circles played a decisive role in the assurance of professional efficacy.

> The free time you need to attend congresses is time that I take to prevent myself from losing interest. Then you're simply not there and people notice it. They say, "You weren't available, you were on one of those refresher courses." But that's the way it is. I say, "If I don't go on those courses, you'll have a doctor who's behind the times and that's the last thing you want." I insist that you can't have one without the other (psychiatrist, own practice, 61).

In addition to continuing education, one in five participants also took advantage of external assistance in the shape of supervision, coaching, or psychotherapy.

Self-organization. The primary features of self-organization were the creation of individual routines and of time structures for dealing with bureaucracy and regular chores. Both reduced the feeling of depletion caused by pointless repetition of tasks and extra work and had a positive effect on the subjective experience of efficiency. Self-organization also involved systematic delegation of activities and the ability to set priorities.

> An internal list of priorities … is very important for me. It's an instrument for identifying what's essential and also for self-preservation. Otherwise, if I am asked to do things that are either genuinely urgent or are described as urgent by others, I will be tempted to agree automatically instead of asking myself whether it's really so important or whether I have even more important things to do (senior psychiatrist, 47).

Limitation of working hours. Adherence to a time table was regarded as an essential feature of self-care that in the medium term benefits both patients and employers. The prerequisites for limitation of this kind were overcoming the belief in one's own indispensability and conscious formulation of resolutions.

> I have to plan and organize my leisure time as if it were important working time, otherwise the whole thing collapses. I invariably have so much to do, not least in the research sector, that I could easily work nonstop 24 hours a day. That's why there has to be a limit, a point at which I say: "Okay, that's it for now." And that point has to be laid down beforehand and stuck to (senior neurosurgeon, 39).

Ritualized time-out periods. Participants' strategies for guaranteeing regular breaks from work ranged from unchanging vacation schedules to power naps or fixed times for meals or snacks. Firmly established time-out routines on a daily, weekly, or annual basis took some of the pressure out of related decisions and justifications (e.g., "Under what circumstances is it okay to keep patients waiting?" "Can I really go on vacation when there's so much to be done?"). Respondents used time-outs to create distance and enjoy a (brief) respite. Accordingly, physicians felt that these breaks played an important part in maintaining professional stamina.

Spiritual practices. Finally, many participants (particularly psychiatrists) indicated that they obtained support and regeneration from spiritual practices or regular meditation.

> My advice is, if you're interested in meditation, yoga, or any of those methods for greater concentration and awareness, then follow it up. If you're not, then you should take an interest—and quickly! (neurologist, own practice, 58).

Useful attitudes

We also asked participants about any attitudes that helped them achieve greater inner freedom in dealing with everyday stressors.

Acceptance and realism. Chief among resilience-promoting attitudes was the ability to refrain from wishful thinking and to accept external realities. Realistic expectations vis-à-vis patients, general parameters, and the professional environment acted as a foundation for coping with stress effectively. They guarded against disappointments, resentment, and self-blame and protected against wasting energy on futile attempts to change things.

> What really helps is to focus on your core activity and to accept the fact that our job doesn't only have to do with operating and looking for medical solutions but also involves a great deal of paperwork. Once you've accepted that and let go, you feel much better. You have to say, "It's 10 o'clock at night and this patient has to go and break his ankle. But I'm going to help him to get over it." Approaching things this way has done me good. It's no use saying, "Why did he have to play football at this time of night?" or "Why does he turn up at 2 o'clock in the morning with his bellyache, although he's had it for five days?" It's a change of mind-set. And it makes me feel better (senior general surgeon, 44).

Self-awareness and reflexivity. For all disciplines, awareness of personal schemas (notably in terms of professional proficiency) and their roots in one's life history, as well as the ability to evaluate life experience, were significant factors. Frequently, crucial events in the lives of these physicians had prompted reflection and self-recognition (e.g., "How do I function?" "Does it have to be that way?") and had become turning points in personal self-care.

Active engagement with the downside(s) of the medical profession. Participants noted the importance of addressing challenges realistically, especially the express rejection of regarding oneself as a victim.

> Ineffectuality is something I produce myself, not what my environment does to me. Whenever the administrative side of the job starts getting on top of me, I ask myself should I expose myself to that or not, should I write to my local [Member of Parliament] or whatever. In such cases I get obstinate and resentful (assistant psychiatrist, 40).

Recognizing when change is necessary. The inner freedom and flexibility to change one's professional location or position, especially in the face of intolerable permanent stress with no prospects of change, was another important attitude. Notably, younger physicians indicated that staying too long in a debilitating or unsatisfactory first job hinders the development of professional self-confidence. They noted that, in such cases, a move at the right time can put a physician back on track.

Appreciating the good things. This strategy referred to the ability to perceive positive events that occur in everyday professional life and not to take them for granted. Participants

registered with conscious gratitude a number of characteristics, including degrees of freedom in the exercise of one's profession, good health, and the opportunity to pursue a meaningful activity. Focusing on these assets was felt to be an important factor in achieving a generally positive attitude toward life and work, which in turn engendered positive experiences with others, and was thus a source of personal gratification.

Discussion

The data reported here confirm resilience strategies identified in the literature.[24] They further highlight the fact that long-term job satisfaction mainly relies on gratifications derived from medical and relational efficacy. These in turn are fostered by practices and strategies described above. Put briefly, our findings suggest that whether the stressor in question is a demanding patient, excessive paperwork, or time pressures, a well-diversified pool of social resources and fields of interest, together with realistic expectancies and good self-knowledge, will support sustainable coping. This, in turn, creates experiences of efficacy that confirm health-promoting attitudes and practices.

This circular process between resource pooling and stress resistance is well described in the Conservation of Resources Theory.[25] In this theory, burnout is a continuous process caused by ongoing, usually low-level, resource depletion resulting from either actual loss of resources or the failure to acquire fresh resources after significant resource investment. Paradoxically, resource loss is also a consequence of energy-saving measures. Both physical and emotional exhaustion frequently lead to social withdrawal, physical inactivity, or adherence to mental and behavioral routines. Though intended as a way of "recharging the batteries," the likely consequence is a feeling of being drained.

Our findings are useful for individuals and groups seeking to develop physician resilience through preventive behaviors. Programs that take these findings into account should sensitize physicians to defensive negative spirals resulting from strain, retreat, and a shrinking resource pool.[26] In addition to relaxation techniques and stress-related coping strategies, physicians should learn to reflect on the extent to which social, physical, and mental resources are actually available. What resources are well cultivated or neglected? The attitudes and practices identified in this study may serve as a blueprint for this kind of reflection. In the next stage of prevention, the logic of positive resource spirals can be used: Physicians who take the time to reinvest in neglected resources in spite of perceived lack of time can be encouraged to observe the positive effects on well-being and professional efficacy. As our study demonstrates, a diversified resource landscape facilitates effective and discriminating decisions about problem-oriented, as opposed to emotion-centered, coping strategies. These, in turn, reduce the perceived stress level and leave more capacities for self-care. Continuous self-awareness as supported by mindfulness-based stress reduction is an important precondition for this process because it helps avoid stereotypic reactions and motivational incongruity.

The reported findings are subject to methodological limitations. First, the self-selection of the sample may lead to a positive bias toward currently resilient physicians. However, this bias is advantageous in terms of the research question. In this case, voluntariness and motivation to share personal insights and experience are indispensable. Second, the frequency of coded attitudes and practices does not reveal their relative importance for individual health. Third, like all survey data, the answers given may be state-dependent. We cannot claim that they are exhaustive. Last, all coded strategies rely on self-reports. Their behavioral validity has not been proven. However, only strategies that could be exemplified by the interview partner were coded.

Conclusions

What characterizes resilient physicians? As our study demonstrates, it is their ability to invest personal resources in a way that initiates positive resource spirals in spite of stressful working conditions. Enriching traditional stress management approaches by encouraging this dynamic would thus appear to be a promising approach. Developing physician resilience is critical not only for physicians themselves but also for the patients they serve.

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Appendix 1

Field Manual Guide for 200 Semistructured Interviews With German Physicians About Their Resilience Strategies, 2010–2011

1. General demographic data: professional experience, specialization, hierarchical status, marital status
2. On a scale from 1 to 10 (1 = extremely negative and 10 = extremely positive), how much enjoyment do you get from your work? What exactly do you like about your job?
3. If you had a second chance, would you still want to be a doctor? If so, why?
4. Which are the major challenges of your profession to your mental and physical health and job satisfaction? How successful would you consider your personal coping?
5. How can a physician remain healthy and satisfied? Which strategies do you apply? Which strategies do you find with your colleagues?
6. If a medical student asked you what he/she could do to prevent burnout: Which advice would you give? Which mistakes you made yourself would you warn against?
7. Do you know feelings of burnout? How do you deal with them? What helps you out?
8. What are your personal risk situations?
9. Do you know colleagues who suffer from burnout? How do they deal with specific professional stressors?
10. Imagine a burnout prevention you would feel interested in. What would it have to look like?