

The Personal and Professional Toll of Stress and Burnout

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The ACR 2018 Intersociety Summer Conference introduced multiple affiliated organizations, including AAPM, to ongoing work to study the problem of work-related stress and burnout in radiologists and radiation oncologists as well as evidence-based solutions that have been developed to combat the problem.¹

Anecdotally, many medical physicists are at risk for burnout due to work-related stress. The research on physician burnout suggests that the risk factors causing high rates of physician burnout also place medical physicists at similar risk.

Stress is defined as an uncomfortable emotional experience that is accompanied by predictable biochemical, physiological, and behavioral changes.² It is frequently described as the condition that triggers the “fight or flight” response.

Burnout is “a syndrome characterized by exhaustion, cynicism, and reduced effectiveness.”^{1, 3} Although clearly defined, burnout currently does not have definitive diagnostic criteria in clinical psychology or psychiatry.⁴ Nevertheless, it can be measured in individuals and populations. In healthcare professionals, burnout has been shown to negatively impact quality of care, patient safety, patient satisfaction, and physician turnover.

Engagement may be thought of as the opposite of burnout⁵. An engaged individual will experience states of increased energy, involvement and connection, and improved effectiveness.

Wellness and *well-being* refer to states of optimal health in physical, mental, and emotional terms. A balanced strategy to achieve and maintain well-being must address work-related detriments to an individual’s well-being in all of these dimensions.

The Growing Burnout Crisis in Healthcare

Recent research indicates that 50% of physicians in the United States are experiencing burnout¹ with nearly 80% of radiologists expressing concern that burnout is a serious problem.⁶ Recognition of the threat of burnout is growing in professions and sectors outside medicine, such as academic science, technology, management, and law. Medical physicists share burnout risk factors with physicians due to their role in healthcare; risk factors from other science, technology, and professional fields also relate to the type of work that medical physicists do and the demands placed on the way they do it. It should also be recognized that the drivers of stress and burnout first appear during training, and practicing professionals may become habituated to accepting these conditions as normal due to chronic exposure over many years.⁷

Systematic changes in healthcare are creating new challenges for professionals. Reduced autonomy and control for individual professionals is a consequence of economic trends including aggressive cost-cutting and consolidation. Many healthcare professionals are frustrated by the effects of these changes on their ability to provide what they believe to be proper care to their patients. Some respond by working longer and more intensely to fulfill their duty to patients in the face of diminishing resources.^{8, 9}

Cultural forces contributing to the problem of burnout include the expectation that individuals will learn to be resourceful, resilient, and master skills like time management¹⁰. The popular contemporary view of values and work ethic¹¹ tends to praise and reward individuals who strive and “hustle.”¹²⁻¹⁵ This creates a stigma for individuals who admit they have a burnout problem and seek help, as well as those who try to avoid overwork to prevent burning out in the first place.

The exhaustion and cynicism of burnout can drive individuals to become isolated from others as they withdraw from social interactions; in turn, this isolation can breed loneliness and amplify the adverse effects of burnout.¹⁶ In a healthcare system that increasingly relies on interdisciplinary cooperation and teamwork, this can have a particularly devastating impact on an individual practitioner’s effectiveness.

Burned-out individuals are at elevated risk for depression and are significantly more susceptible to outcomes such as substance abuse, divorce, and suicide.^{1, 3}

In the healthcare setting, burnout has been shown to compromise the performance of physicians and other providers, manifesting as increased error rates, reduced adherence to evidence-based guidelines, and altered patterns in prescribing and test ordering. These performance deficits lead to poorer patient outcomes, reduced patient safety, reduced patient satisfaction, and increased risk of malpractice liability.

The cognitive and behavioral consequences of burnout can render an individual impaired to practice in addition to raising the likelihood of substance abuse. Healthcare professionals who are already tasked to be aware of potentially-impaired colleagues should be aware of burnout as another source of impairment. Practitioners who engage in disruptive or abusive behavior, make significant errors, or deviate from accepted and established practices should be promptly assessed for impairment (regardless of the cause) and removed from the clinical environment if warranted. Ideally, a formal mechanism for this exists in the institution. Informally, colleagues who are alert to signs of trouble in a colleague and reach out to offer assistance are instrumental in mitigating adverse events while helping establish a more supportive community environment in their workplace.

The Challenge for Medical Physicists

The science of measuring and managing stress and burnout in medicine is maturing rapidly and it is imperative that the medical physics profession follow suit. Medical physicists are well equipped to apply their skills and use established tools and methods to study the problem of burnout in the profession. This exercise in systems-based practice is an essential element of practice management and quality improvement for individual practices as well as for the profession as a whole.

Personal well-being for the healthcare provider is considered the “Fourth Aim” in modern healthcare, recognizing its inextricable connection to quality and safety of care and patient experience, containment of costs, and improved health for patients.¹⁷

Factors Driving Stress and Burnout

Shanafelt and Noseworthy³ describe seven characteristics of the physician work environment that

can drive individuals toward either burnout or engagement:

- Efficiency and resources
- Workload and job demands
- Control and flexibility
- Meaning in work
- Organizational culture and values
- Social support and community at work
- Work-life integration

These characteristics also apply to the medical physics work environment. Each category is a potential source of stress when there is a difference between the conditions that exist and the individual's preferred or desired state. For example, an individual who desires a high level of meaning in their work, but perceives their job duties to be routine, tedious, or lacking in impact will feel stress as result. Individuals have different preferences within these categories and ascribe different relative importance to the categories themselves, and different departments, teams, and institutions provide different conditions.

One common source of stress is the influence of compensation plans on individuals' preferences and choices.¹ A compensation plan that financially rewards high volumes of work (such as reports or procedures) can induce individuals to take on a much larger workload than they would naturally prefer in pursuit of higher compensation. Medical physicists feeling economic pressure to build savings, provide for family or future expenses, and other motivations are more likely to take on stress-inducing workloads and to try to sustain them for long periods of time, driving them toward burnout. Such volume-based compensation plans rarely include balancing mechanisms to incentivize maintaining a healthy workload and prevent this scenario.

Another concerning trend is that across all of healthcare, there are progressively fewer resources to go around while consolidation concentrates control in fewer, higher-level managers and executives. Organizations that can currently provide their employees with satisfactory levels of resources and control over their work are systematically losing this margin; in places where stress already exists, the gap is likely to grow and thus stress is likely to increase.

Interventions and Solutions

Many workplace programs to mitigate burnout and promote wellness start from an individually-oriented approach. Wellness programs frequently include education on health-related topics such as diet, exercise, and sleep, programs to promote physical activity using wearable electronic tracking devices, yoga and meditation classes, and training on breathing, relaxation, mindfulness, time management, and so forth. The stated aim of these programs is to build individual resilience. Such programs are an important part of a comprehensive approach, as they reduce the symptoms for individuals experiencing stress and burnout, but they do not, on their own, address the systematic root causes of work-related stress.

An overemphasis on teaching individuals how to better tolerate their stress or adjust their expectations inevitably sends individuals the message that they are at fault for the problem of stress (examples of this messaging abound in popular media¹⁸); this in turn increases stress due to the cognitive dissonance and moral injury inflicted by feeling like a victim of a flawed system one cannot control, yet being blamed personally for those effects.

As noted earlier, the work environment traits that drive stress often stem from departmental, institutional, or even national trends.³ Individual interventions can help combat the effects of these stressors to some degree, but cannot remove them. Leaders at these levels must recognize the threat of burnout and make decisions (including allocating resources) to improve the alignment between work environments and individuals' ability to work within them at healthy stress levels. To do so effectively, a data-driven approach is needed to justify the changes that will mitigate individuals' stress while supporting the organization's business objectives.

Fortunately, numerous evidence-based, validated tools already exist for assessing stress and burnout in healthcare professionals. These tools have been used in many organizations and benchmarks exist for some medical specialties. It appears to be straightforward to apply these tools to study the current state of burnout in the medical physics profession, for which there is currently no specific data. Studies of the medical physics workforce have already indicated some trends

toward high and increasing workplace stress due to inadequate staffing, resource constraints, and high workloads, among other factors.¹⁹ The time has come for the medical physics profession to take initiative to assess the burnout problem and develop solutions; regulatory and accrediting authorities are aware of the problem²⁰ and the threat to patient safety that it represents, and for the sake of our own professional autonomy and sustainability, we should act before external mandates are imposed upon us.

One promising strategy that aligns improved well-being with other business objectives is the pursuit of improved meaning in work. Research has shown that individuals who spend 20% of their time on work they feel is most meaningful to them experience the maximum degree of satisfaction in their work¹; spending additional time in high-meaning work does not further increase satisfaction. Technology companies like Google famously provide their employees with 20% "free time" to work in self-directed projects that are most attractive to them. This approach has resulted in high employee engagement, and many projects initiated by employees have resulted in innovative and valuable products for the companies.

A Call to Action for Medical Physicists

The effects of stress and burnout are impacting the medical physicist workforce right now. We must not wait for a high-profile tragedy to compel us to act to remedy the system problems that compromise our health and our professional performance.

As individuals, it is essential that all medical physicists examine the sources of stress in their work environment and consider their impacts. In addition, we must educate ourselves about and be alert for signs of impairment in ourselves and colleagues.

As a professional community, we must:

- develop a scientifically rigorous assessment of burnout in our community;
- justify improvements to reduce stress in conjunction with quality, safety, and cost improvements;
- and advocate for changes in our institutions.

The health and safety of our patients and the future of our profession are depending on us.

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