Grit & Resilience in Learners

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Blake Barker, MD, FACP
Associate Dean for Student Affairs
Assistant Professor of Medicine
Division of General Internal Medicine

This is to acknowledge that Blake Barker, M.D. has disclosed that he does not have any financial interests or other relationships with commercial concerns related directly or indirectly to this program. Dr. Barker will not be discussing off-label uses in his presentation.

Purpose & Overview:

Medical students and residents will encounter many challenges on their paths to becoming highly functioning professionals. The career of a physician also invariably includes many additional tests of her or his personal and professional limits. Unfortunately, mounting evidence over the last decade demonstrates that half or more of all medical students, residents and practicing physicians exhibit symptoms of burnout. A concerning proportion also experience depression and substance abuse with nearly 400 physicians taking their own lives every year (twice the rate of the general population). Burnout has been associated with a long list of professional and personal consequences. The problem has been well-chronicled over the last decade, and now is the time to move towards solutions. Fortunately, there is also evidence of effective approaches to develop our learners' resilience and grit. The purpose of this presentation is to inform and arm faculty with the knowledge and skills necessary to transform our population of learners into the future generation of resilient and gritty physicians required to meet the increasing needs of our patients and society.

Educational Objectives:

1. Summarize the scope, consequences and drivers of burnout among physicians and learners.
2. Examine the concept of resilience and its potential role in addressing burnout.
3. Describe the impact of faculty, curricula and systems on burnout and resilience.
4. Identify opportunities to improve resilience in a population of learners.
5. Explore the concept of grit and possible applications to medical education.

Biosketch:

Dr. Blake R. Barker is an Assistant Professor of Medicine at UT Southwestern Medical Center in the Division of General Internal Medicine. Dr. Barker completed his undergraduate degree at Rice University in Houston, TX. He graduated from medical school at the Baylor College of Medicine in 2007 followed by residency in Internal Medicine at McGaw Medical Center of Northwestern University in Chicago, IL in 2010. He stayed at Northwestern one additional year as a teaching hospitalist before joining UT Southwestern in 2011 where he has since pursued interests in primary care and medical education. In addition to practicing outpatient general internal medicine, he regularly serves as teaching attending at both Parkland Memorial Hospital and Clements University Hospital. Dr. Barker served as Co-Director of the Internal Medicine Clerkship from 2014 through 2016. He subsequently transitioned to Associate Dean for Student Affairs in January, 2017 where he has taken interest in the personal and professional development of medical students.

Introduction

Physicians encounter a unique constellation of challenges in their careers including long hours, heavy workloads, diagnostic uncertainty, bearing witness to suffering and intense interactions with patients, families and other members of the healthcare team. Physicians' day-to-day work may be becoming more stressful and complex with increased public expectations and an anticipated workforce shortage. In view of these headwinds, it is not surprising that many physicians experience distress in the form of burnout, depression, anxiety, substance abuse and even suicide at a rate twice the average of the general population (400 physicians – or 2 medical graduating classes – per year)[1]. Yet, many other physicians clearly thrive and benefit from the privileges of an exceptionally engaging, noble and highly valued profession. Educators of future physicians, therefore, face a challenge themselves: to develop trainees who possess the personal and professional skills to maintain their own health and flourish in the face of adversity to meet the growing needs of our patients and society.

Burnout in Practicing Physicians

Burnout is described as a syndrome of exhaustion, cynicism towards work and reduced effectiveness. Burnout was first characterized among workers in the early 1970s. Although initially dismissed as "pop-psychology", it has since been validated in a wide variety of occupations. The most commonly utilized tool to assess burnout in healthcare is the Maslach Burnout Inventory (MBI). This tool was developed by Dr. Christina Maslach, a social psychologist at UC Berkley, in the early 1980s to quantitatively assess burnout in human services occupations[2]. The MBI assesses burnout in three domains:

(1) Emotional Exhaustion: the feeling of being overextended and depleted of one's emotional and physical resources

(2) Depersonalization: cynicism, callousness or excessive detachment towards various aspects of the job, including the recipients of one's service

(3) Low Personal Accomplishment: the feeling of incompetence, lack of achievement or productivity at work

Burnout may manifest in any one of these dimensions. Workers in fields that have intense interactions with people are particularly vulnerable to burnout[2]. As will be discussed further, physicians, residents and medical students often struggle most with emotional exhaustion (EE) and depersonalization (DP) – such as "treating patients like objects" – despite a sense of high personal accomplishment.

Burnout is context-specific. For instance, you may experience burnout at work but not at home, or you may experience burnout in one aspect of your job but not another. This is in contrast to mood disorders, like depression, which typically transcend such boundaries.

An estimated 50% of U.S. practicing physicians are currently experiencing burnout in at least one domain, most frequently either EE or DP. The prevalence may have increased over the last decade and is far more than other professions. Compared to high school graduates, workers with more education, including a bachelor's degree, master's degree, or non-MD/DO professional degree all have a *lower* risk of burnout, whereas, physicians have a *higher* risk of developing burnout (Figure 1).

Degree	Odds Ratio of Burnout vs High School Graduate	P value
Bachelor's	0.8	.048
Master's	0.71	.01
Professional/Doctoral other than MD/DO	0.64	.04
MD/DO	1.36	< .001

Figure 1: Odds ratio of developing burnout based on level of education (adapted from Shanafelt et al. Archives of Internal Medicine 2012)[3].

Among practicing physicians, burnout varies by specialty with those in emergency medicine and adult primary care (family medicine & general internal medicine) at the highest risk (Figure 2) [3].

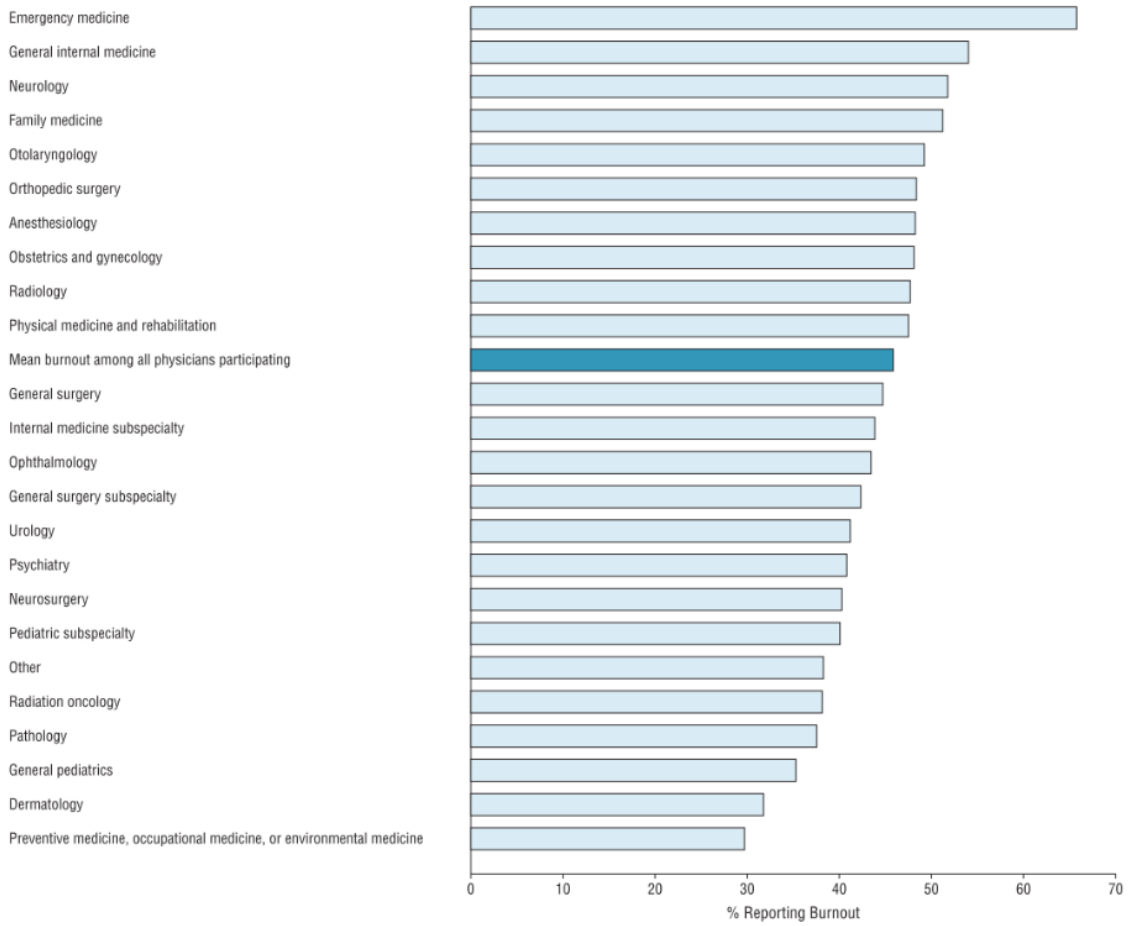


Figure 2: Physician burnout by specialty

There is insufficient empirical data to clarify whether or not burnout is a new problem among physicians and trainees. The first national study of burnout among practicing physicians was not conducted until 2011[3]. Prior to 2005, there was only one study performed on burnout among medical students[4]. However, over four decades, burnout has been demonstrated among workers in a variety of other human services occupations, including health care (in particular, nursing). In addition, there is a concerning body of evidence reflecting potential consequences of burnout including depressive symptoms and physician suicide.

The Roots of Burnout

Burnout appears to have roots in training. Upon entry to medical school, matriculants have lower rates of burnout and depression and higher ratings on quality of life scales in multiple domains than peers after controlling for age, sex, relationship status and race/ethnicity[5]. However, after the first year of medical school, something changes. During medical school, 1 in 4 have depressive symptoms, and, more worrisome, 1 in 10 experience suicidal ideations[6]. Similarly, symptoms of burnout begin to manifest and appear to increase over time during medical school. In cross-sectional studies, 35-45% of medical students reported high EE and 26-38% had high DP. Overall, 45-56% had symptoms consistent with burnout in at least 1 domain[4]. Just before graduation, 1 in 2 medical students exhibit signs of burnout just as they are moving into residency and adopting a more sensitive role in patient care[7].

During residency, symptoms of burnout continue. Rates of EE remain elevated but relatively stable. However, DP appears to increase. Evidence regarding whether burnout changes during the duration of residency is conflicting with some studies suggesting modest improvement after intern year and others showing no change. Burnout does not appear to vary by residency specialty though this has not been consistently evaluated in existing literature. Early career physicians (less than 5 years from residency) do exhibit less burnout, but rates still remain much higher than the age-matched population[8].

The prevalence of burnout in medical students and residents may be increasing. Among medical students, more recent publications show higher rates of EE, DP and overall burnout compared to less than a decade prior. Similarly, among residents, recent data show higher EE and overall burnout, but stable levels of DP[4]. Due to methodological heterogeneity, more rigorous analyses are limited in determining whether there is truly a trend. In addition, it is not clear if such a trend, if present, would be attributable to greater awareness and detection or a true change in prevalence. Regardless, it is evident that the prevalence of burnout remains consistently alarmingly high over nearly a decade of analysis.

Potential Consequences of Burnout

Burnout has been linked to a long and disturbing list of professional, personal and societal consequences. Among medical students, those who have higher levels of burnout are more likely to report cheating & dishonesty regarding patient care (including reporting lab tests as pending when the status is unknown or reporting physical exam findings for components which were not performed). Medical students with higher burnout also have more difficulty identifying appropriate management of conflicts of interest, are less likely to endorse altruistic values regarding physicians' responsibility to society, and are more likely to endorse self-prescribing behaviors. Among residents, those with greater burnout are more likely to report medical errors and have lower in-training exam scores. Burnout influences specialty choice in both medical students and residents with those with higher EE more likely to seek specialties with a more manageable lifestyle, and those with higher DP more likely to choose specialties with higher compensation (Figure 4). In addition to professional consequences, burnout among trainees has also been linked to higher rates of suicidal ideation, alcohol abuse/dependence, a greater sense of stigma regarding mental health problems, increased motor vehicle accidents, relationship distress, and thoughts of dropping out (Figure 4). Although it is not possible to establish causation in these studies, burnout appears to at least be a consistent surrogate for underlying personal and professional dysfunction and distress.

These consequences all potentially come at significant cost to patients, institutions and society. Considering medical school attrition as an example, 3-4% of U.S. medical students drop out each year (approximately 620 students, or the equivalent of 3-4 graduating classes). With total cost of attendance ranging from $36,000 to $57,000 per year, the personal financial cost of attrition could be $28,800,000 if only one year of attendance was completed for all students who dropped out[9]. The actual accrued debt is likely far higher. Institutional costs of medical student education are more difficult to define but have been estimated to be $70,000 to $90,000 per student per year. Institutional cost of attrition would be upwards of $49,600,000 if only one year of attendance were completed for all students who dropped out[10].

Professional Consequences of Burnout Among Learners	Personal Consequences of Burnout Among Learners
• Lower empathy • Cheating • Dishonesty regarding patient care • Problems managing conflicts of interest • Fewer altruistic values • Inappropriate prescribing behaviors • Less likely to report impaired colleagues • Influence specialty choice • Medical errors • Lower in-training exam scores	• Suicidal ideation • Alcohol abuse/dependence • Greater sense of stigma regarding mental health problems • Increased motor vehicle accidents • Relationship distress • Thoughts of dropping out

Figure 4: Personal and professional consequences associated with burnout among learners

Of note, burnout among practicing physicians has been associated with a similarly disturbing list of personal and professional consequences, including broken relationships, alcoholism, suicide, poorer quality of care & patient safety, lower patient satisfaction, malpractice lawsuits and the likelihood that patients will adhere to treatment recommendations (Figure 5)[11].

Personal and Professional Consequences of Burnout Among Practicing Physicians
• Broken relationships • Alcoholism • Suicide • Lower quality of care & patient safety • Lower patient satisfaction • Malpractice lawsuits • Prescribing habits • Inappropriate test ordering behaviors • Lower likelihood that patients will adhere to medical recommendations

Figure 5: Personal and professional consequences associated with burnout among practicing physicians

For over a decade, the high prevalence of burnout among medical students, residents and practicing physicians has been well documented. Burnout is clearly associated with a long list of unacceptable professional and personal consequences. Echoing viewpoints of many experts in physician burnout, the time is now to move beyond documenting the problem to defining solutions. As such, multiple national organizations, including the National Academy of Medicine, have voiced a call to action. In addition, national organizations for medical education include resilience and wellness among their highest priorities (Figure 6).

Select perspectives on wellness and resilience from national organizations for medical education
AAMC Core Competencies For Entering Medical Students: Resilience & Adaptability ▪ Demonstrates tolerance of stressful or changing environments and adapts effectively to them; is persistent, even under difficult situations; recovers from setbacks. **LCME Standard 12.3: Personal Counseling/Well-Being Programs** ▪ A medical school has in place an effective system of personal counseling for its medical students that includes programs to promote their well-being and to facilitate their adjustment to the physical and emotional demands of medical education. **ACGME Common Program Requirements VI.C: Well-Being** ▪ In the current health care environment, residents and faculty members are at increased risk for burnout and depression. Psychological, emotional, and physical well-being are critical in the development of the competent, caring, and resilient physician. Self-care is an important component of professionalism; it is also a skill that must be learned and nurtured in the context of other aspects of residency training. Programs, in partnership with their Sponsoring Institutions, have the same responsibility to address well-being as they do to evaluate other aspects of resident competence.

Figure 6: Select perspectives on wellness and resilience from national organizations for medical education

Resilience

Resilience has been defined in many different ways. Dr. Boris Cyrulnik, a French psychiatrist and early developer of the concept of psychological resilience, defines it as "The ability to succeed, to live, and to develop in a positive way … despite the stress or adversity that would normally involve the real possibility of a negative outcome"[12]. In other words, resilience can be thought of as the antidote to burnout or "the ability to bounce back". Similar to burnout, resilience is domain-specific, meaning that an individual may demonstrate greater resilience in one aspect of her or his life than another. Resilience is also context-specific. For instance, an individual may be remarkably resilient under normal circumstances but demonstrate diminished reserve following a significant life event, such as the death of a close relative. Resilience is dynamic and can be developed over time as opposed to more durable personality traits.

A variety of personal and environmental factors appear to drive whether or not a person can manifest resilience as opposed to a negative outcome (such as burnout or distress). To identify potential solutions to improve learner resilience, it is helpful to begin with the literature exploring factors that contribute to burnout and those that associate with resilience.

Some durable personality traits, including neuroticism, introversion and conscientiousness have been shown to correlate with higher burnout or lower resilience. Individuals who are more extroverted are thought to be able to more quickly assemble social support structures which are themselves related to resilience[13]. Non-minority race or ethnicity has been shown to be related to higher rates of burnout[14]. The reasons for this are unknown and require further investigation. However, a common hypothesis is that minority students must overcome much adversity in their path to medical school and residency, and they may enter training with greater baseline resilience. Both men and women are likely at equal risk for burnout. Women may be at slightly greater risk of emotional exhaustion, and men may be at slightly greater risk of depersonalization[15].

High educational debt, a lack of social support, poor coping mechanisms, negative personal life events (such as divorce or death of close family member) and baseline mental health problems (such as depression) may also decrease resilience[4]. These personal factors may highlight opportunities for educational programs to improve the resilience of learners, such as structuring opportunities to develop social networks and decreasing barriers to care for those who are experiencing depression, anxiety or grief during training.

In addition to personal factors, there are many environmental stressors that contribute to burnout and the ability to be resilient. In healthcare and other industries, these systems factors appear to contribute more significantly to burnout than personal factors, and are also more modifiable by educational and healthcare leaders[11]. With respect to students and residents, Dyrbye, et al summarized these in a narrative review

in 2016 (Figure 7)[4]. The authors highlight many curricular, organizational and learning environmental factors which present clear opportunities for educational leaders to intervene. A few specific examples of these will be reviewed below.

Medical Students	Both Students & Residents	Residents
• Human dissection • First death experience • Poor learning environment • Inadequate support from faculty, staff, peers • Education is not a priority for faculty • Disorganized rotations • Poor supervision • Cynical residents • Limited variety of medical problems encountered • Mistreatment • Number of grading tiers	• Adjustment • Competition • Patient and family suffering • Specialty decision-making • High stakes assessments • Lack of personal time • Financial concerns related to student debt • Negative personal life events	• Added responsibility for patient care • Research productivity • Medical licensure requirements • Job search • Lack of control • Excessive administrative tasks • Work compression • Excessive workload • Overnight call frequency • Work-hours • Limited autonomy • Lack of timely feedback • Stressful relationships with superiors • Uncertainty about the future • Medical error • Perception that personal needs are inconsequential to training program

Figure 7: Potential stressors and contributors to burnout among learners

In 2007, Reed, et al explored the relationship between curriculum and medical student burnout[16]. They surveyed first- and second-year medical students at seven U.S. medical schools utilizing validated scales for stress, quality of life and burnout (MBI). Student responses were analyzed against curricular structure (amount of didactics, clinical and test experiences) and number of grading tiers (pass/fail vs three or more tiers). Overall, the frequency of stress, burnout and quality of life was similar to prior studies. Following multivariate analysis, only the number of testing experiences and grading tiers showed a relationship with stress, quality of life or burnout. The number of testing experiences was significantly, though weakly, associated with stress, quality of life and thoughts of dropping out. However, the number of testing experiences was not associated with any domain of burnout. Three or more grading tiers, by contrast, was more strongly associated with stress, overall burnout, EE, DP and serious thoughts of dropping out, but not quality of life. Of note, several prior studies regarding pass/fail curricula have shown that implementation does not change student academic achievement[17]. Important decisions about curricular design, including instituting a pass/fail curriculum, require careful consideration of many educational outcomes, but this study does clearly demonstrate that such decisions have significant impact on student wellbeing and thoughts of dropping out.

In multiple studies, learning climate and interactions with superiors has been shown to be significantly associated with burnout among medical students. For instance, Dyrbye et al published a cross-sectional study of medical students at five U.S. medical schools in 2006 regarding the relationship between burnout, learning environment and positive or negative personal life events. For both pre-clinical and clinical students, a variety of learning climate factors (including level of support from faculty, organization of rotations, resident cynicism) appeared to be among the most significant independent associations with the likelihood of burnout (Figure 8)[18].

	Odds Ratio of Burnout (95% CI)	P-value
Year 1 and 2 Students		
Overall learning environment	1.78 (1.47-2.15)	< 0.0001
Level of support from faculty	1.39 (1.13-1.71)	0.002
No. of positive life events	1.79 (1.06-3.03)	0.03
Female gender	1.42 (1.05-1.96)	0.04
Year 3 and 4 Students		
Overall learning environment	1.49 (1.15-1.91)	0.002
Organization of rotations	1.38 (1.06-1.80)	0.02
Cynical residents or interns	1.35 (1.16-1.56)	<0.0001
Supervision from residents	1.35 (1.00-1.83)	0.052
Variety of medical problems	1.33 (1.00-1.77)	0.054
Non-minority student	1.92 (1.21-3.04)	0.006

Figure 8: Independent associations with burnout among medical students (adapted from Dyrbye et al. Medical Education 2009)

Haglund et al examined the experience of stressful events during the third year of medical school and various psychological outcomes among 125 medical students at the Mount Sinai School of Medicine during the 2006-2007 academic year[19]. Students received quarterly surveys assessing for symptoms of depression (Beck Depression Inventory (BDI)), anxiety (Beck Anxiety Inventory (BAI)) and posttraumatic stress disorder (Posttraumatic Stress Disorder Checklist, Civilian Version (PCL-C)). In addition, students received monthly surveys asking them to report traumatic and non-traumatic stressful events, utilizing DSM-IV criteria to define trauma exposure. Finally, at the beginning and end of the study year, students completed validated scales for personal growth, coping skills, religious coping skills and other individual risk factors (such as prior personal trauma exposure). Students logged 875 events, 199 of which were coded as traumatic (this was validated by the study authors). Of the traumatic events, 98% involved patient suffering or death or threatened violence. The mean number of traumatic events per student was 2.0, which approximates the lifetime exposure of the general population. Of the non-traumatic events, 30% were student-patient interactions and 61% were negative student-physician interactions (belittling, mistreatment, etc.) or negative physician-patient interactions (poor role modeling). The mean number of negative student-physician and physician-patient interactions was 3.2 per student with 89% of students reporting at least one.

During their third year of medical school, student BAI scores remained stable while BDI scores were significantly elevated compared to baseline by the second quarter and remained elevated. PCL-C scores were significantly elevated in the second and third quarters but returned to baseline by year's end (Figure 9).

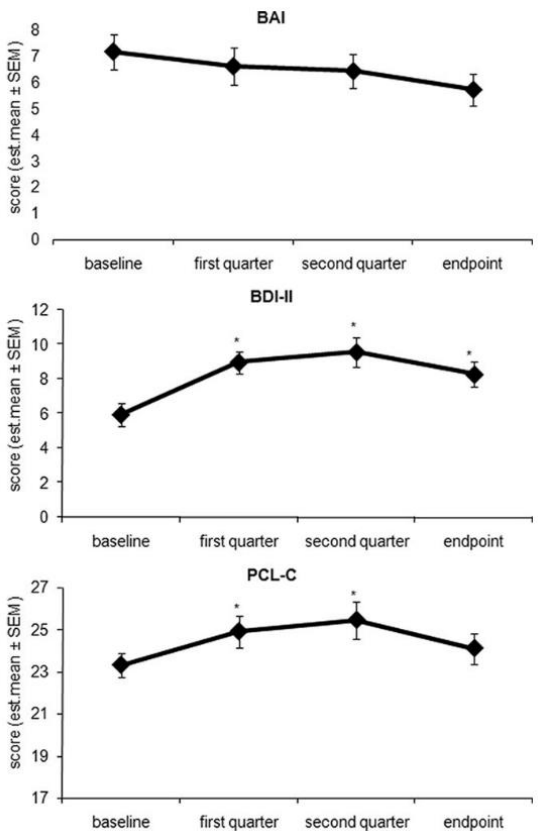


Figure 9: Changes in anxiety, depression and posttraumatic stress experienced by third-year medical students

Interestingly, higher endpoint BAI, BDI and PCL-C scores did not correlate with the number of traumatic events. However, the number of non-traumatic events (largely, negative interactions with or poor role modeling by superiors) was associated with both endpoint depression and posttraumatic stress symptoms. Other predictors of higher endpoint depression included baseline depression and history of prior childhood trauma. Finally, traumatic events (but not non-traumatic events) were associated with greater endpoint personal growth. This study sheds light on several important experiences of the third year of medical school: (1) students will be exposed to as many traumatic experiences as most people experience in their lifetime; (2) that exposure to trauma, however, is often fertilizer for personal growth; (3) as faculty, our interactions with students and role modeling during this crucial transformational period can have profound impact.

One additional longitudinal study highlights the relationship between learning climate and burnout or resilience. In 2006-2007, Dyrbye et al surveyed medical students in all four classes at 5 U.S. medical schools at the beginning and end of the academic year for demographics, perceptions of the learning climate and also for stress, fatigue, quality of life, and burnout (MBI) utilizing validated scales[14]. The authors analyzed factors associated with resiliency to burnout at the beginning or end of the academic year. They also analyzed factors associated with students who report burnout at the beginning but not the end of the study (those who "bounced back"). Factors independently associated with resiliency to burnout at either time point included non-white ethnicity/race, increased satisfaction with the learning environment, greater agreement that student education is a priority for faculty members, lower fatigue, and lower stress. Perceptions of the learning environment were more strongly correlated with resiliency than other non-demographic factors. Factors associated with recovery from burnout included non-white ethnicity/race, greater agreement that student education is a priority for faculty members, higher stress, and working for income.

Again, the perception of learning climate was more strongly correlated with recovery than non-demographic factors.

	Odds Ratio (95% CI)
Factors associated with resiliency to burnout	
Non-white	1.92 (1.23-2.99)
Increased satisfaction with the learning environment	1.52 (1.21-1.90)
Greater agreement that student education is a priority for faculty members	1.33 (1.02-1.74)
Higher fatigue	0.93 (0.89-0.98)
Higher stress	0.86 (0.83-0.88)
Factors associated with recovery from burnout	
Non-white	2.34 (1.18-4.64)
Greater agreement that student education is a priority for faculty members	1.59 (1.67-2.18)
Higher stress	0.86 (0.82-0.91)
Working for income	0.35 (0.13-0.95)

Figure 10: Independent associations with resiliency and recovery from burnout in medical students (adapted from Dyrbye et al. Medical Education 2010)[14]

Although these studies cannot definitively establish causation, they provide compelling evidence that as educators, our decisions regarding curriculum, testing, grading, organization as well as our direct interactions with learners, in particular, role modeling, may impact their wellbeing, resiliency and likelihood to experience burnout.

Resident burnout is frequently assumed to be related to workload and work hours. Cross-sectional and longitudinal studies of resident wellbeing and other work-related factors have not consistently shown a relationship between workload, work hours, overnight call or burnout, however[20,21]. Much work has been published attempting to analyze the impact of the 2003 and 2011 Accreditation Council for Medical Education (ACGME) mandated work hour limitations. Results have been mixed with the majority of studies showing no difference in burnout following changes in work hours restrictions[4]. A systemic review of patient and educational outcomes following the 2003 implementation showed inconsistent results with only 3 of 7 studies showing an improvement in burnout among residents. Other measures of resident wellbeing did improve as did patient mortality though the latter could represent a secular trend[22].

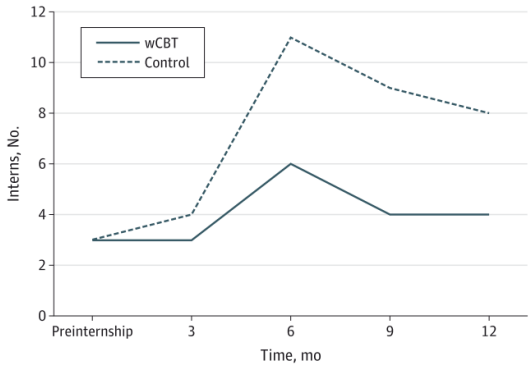
Characteristic	No. (%) 2008–2009 cohort (n = 108)	No. (%) 2011–2012 cohort (n = 123)	*P* value
Overall burnout			
Burnout prevalence at the start of training	40/108 (37)	36/123 (29)	.21
Burnout prevalence at the end of PGY-1	91/108 (84)	92/123 (75)	.08
Burnout incidence	55/68 (81)	59/87 (68)	.07
Depersonalization			
High DP subscores at the start of training	36/108 (33)	33/122 (27)	.30
High DP subscores at the end of PGY-1	81/107 (76)	80/123 (65)	.08
High DP incidence[b]	52/72 (72)	52/89 (58)	.07
Emotional exhaustion			
High EE subscores at the start of training	18/107 (17)	16/123 (13)	.42
High EE subscores at the end of PGY-1	71/108 (66)	69/123 (56)	.13
High EE incidence[c]	55/89 (62)	57/107 (53)	.23

Figure 11: Prevalence and incidence of burnout among internal medicine residents before and after 2011 Duty Hour Restrictions

Following the 2011 changes, Ripp et al found similar levels of burnout in 2008-2009 and 2011-2012 cohorts of residents at three institutions (Figure 11)[23]. To explain these findings, some authors have proposed that work compression – the need to accomplish the same amount of work in a shorter period of time – may diminish any potential benefits from work hours restrictions, but more research is needed to investigate this possibility[24].

Evidence-Based Strategies to Improve Learner Wellness

The available evidence on interventions to improve learner resilience and wellbeing is limited but growing. Multiple small curricular implementation studies have shown potential benefits for stress reduction, burnout reduction or increased wellbeing among students and residents. These include mindfulness-based stress reduction, meditation, self-hypnosis, adaptive coping strategies (reflection, positive reframing and problem solving). Organized social events and smaller learning community structures may also improve wellness through social support groups. At Northwestern University, Kushner et al utilized behavioral change planning to improve medical student self-care. Guille et al reported a significant decrease in thoughts of suicide for interns who participated in a weekly 30-minute web-based cognitive behavioral therapy tool compared to controls who received general information (Figure 12)[25]. In addition, depression and burnout screening tools, access to care and wellness resources, and promoting a culture of zero tolerance to harassment and mistreatment are all likely to be important for the wellbeing and resiliency of any population of learners.



wCBT indicates web-based cognitive behavioral therapy.

Figure 12: Number of interns endorsing suicidal ideation during internship year

Much more research is needed to define the most effective interventions to improve and sustain learner wellness and resilience. In addition to curricula that facilitate wellness away from work, interventions that help future physicians remain well while at work are needed as well.

Several qualitative and quantitative studies have attempted to examine the habits of resilient practicing physicians. Resilient surgeons are more likely to prioritize self-care, including adhering to CDC recommendations for exercise and seeing their primary care physician annually[26]. In qualitative studies, resilient physicians report deliberately focusing on sources of job-related gratification, including cultivating relationships with patients and colleagues, celebrating victories and engaging in professional development. They highlight the acceptance of personal limitations and self-awareness of when they need to recharge as important. Practices common to resilient physicians

include personal reflection, self-demarcation of boundaries, deliberate limitation of work hours, and active engagement in the downsides of practice[27,28].

Grit

After working in inner city schools as a science teacher, Dr. Angela Duckworth noted that the smartest kids in her class were not always the highest achievers. She became interested in the psychology of achievement and ultimately developed the psychological construct of grit. She describes grit as "perseverance x passion". Now a professor of psychology at University of Pennsylvania, she has demonstrated the role of grit (measured by the "Grit Scale" or "Short Grit Scale" (Figure 13); note that lower scores represent higher levels of grit) in predicting who will and will not achieve in a variety of settings. In 2013, she was awarded the MacArthur Genius Fellowship for her work[29].

Item
Consistency of Interest
1. *I often set a goal but later choose to pursue a different one.*
5. *I have been obsessed with a certain idea or project for a short time but later lost interest.*
6. *I have difficulty maintaining my focus on projects that take more than a few months to complete.*
2. *New ideas and projects sometimes distract me from previous ones.*
4. My interests change from year to year.
3. I become interested in new pursuits every few months.
Perseverance of Effort
9. *I finish whatever I begin.*
10. *Setbacks don't discourage me.*
12. *I am diligent.*
11. *I am a hard worker.*
7. I have achieved a goal that took years of work.
8. I have overcome setbacks to conquer an important challenge.

Short Grit Scale)

Some of her early work was with new cadets at the United States Military Academy, commonly known as "West Point". The admissions process at West Point involves calculation of a composite metric called the "Whole Candidate Score", which includes high school GPA, standardized test scores and leadership experience, among other criteria. The Whole Candidate Score predicts well who will be among the highest achievers at West Point, but not until after the gruesome first seven weeks at West Point called "Beast Barracks". Many cadets drop out during those seven weeks, and the Whole Candidate Score did not discriminate well who would and who would not continue. Duckworth demonstrated that the 12-item "Short Grit Scale" was a superior predictor of attrition during Beast (Figure 14)[30].

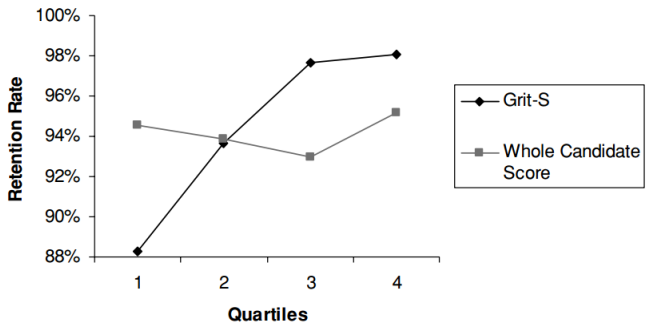


Figure 14: Retention following Beast as a function of ranked quartiles of grit in West Point cadets

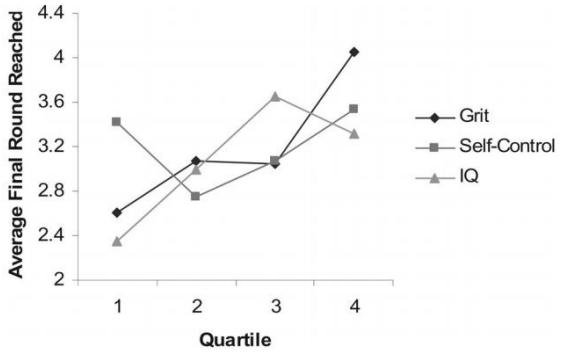


Figure 15: Final round reached as a function of ranked quartiles of grit of National Spelling Bee contestants

She has also demonstrated that the grittiest competitors (rather than those with the highest IQ or self-control) in the National Scripps Spelling Bee are more likely to reach the final round (Figure 15)[31]. She describes grittier individuals as not only passionate and focused on a long-term goal but uniquely capable of pursuing mundane tasks unlikely to provide short-term gratification in pursuit of that goal. Grit has subsequently been shown to also predict attrition in a wide variety of settings, including the Army Special Operations Force selection course, sales jobs, high school students, novice teachers and marriage[32].

It appears that grit may be to endurance and achievement as resilience is to wellbeing. The concept of grit may have some relevance to medical training, and several small studies have been published on grit in surgical residents. Two separate studies of general surgery residents have shown that residents with lower levels of grit had more thoughts of leaving residency (though in neither case did it predict actual attrition)[33,34]. Higher grit has been associated with greater psychological wellbeing and less depression[33,35]. In a study of 41 residents in 9 surgical specialties at Stanford, baseline grit also predicted lower burnout (including EE and DP) at 6 months[35]. Two studies of grit among surgical residents in the United Kingdom show that greater grit correlates with year in training and age and that practicing physicians have greater grit than trainees[36,37]. This seems to suggest that one can develop greater grit over time – thus, it is presumably learnable and teachable.

Initiatives at UT Southwestern

There are many exciting initiatives underway for our learners at UT Southwestern. Dr. Preston Wiles and colleagues at Student Wellness and Counseling not only provide crucial one-on-one services for students in distress but have also been disseminating their message of wellness through sessions in the Academic Colleges and Ambulatory Clerkship, among others. In the next academic year, the Office of Students Affairs will be implementing a new required course for MS1s and MS2s focused on personal and professional development with several sessions focused on wellness, resilience and grit. The mentor groups and learning societies of the Academic Colleges program, and the multitude of functions at the Bryan Williams Student Center also provide rich opportunities for social support and engagement. The implementation of pass/fail grading in the first 18 months of the new curriculum has also anecdotally improved student stress and social functioning in the medical school.

Drs. Dino Kazi and Shannon Scielzo have developed innovative screening tools to identify Internal Medicine residents in distress or experiencing burnout. They schedule regular social events as well, strategically targeting the need for social support. A new "Wellness Coordinator" confidentially facilitates scheduling of medical appointments, previously a cumbersome and complex process that residents had unfortunately foregone.

Finally, at the institutional level, Dr. David Weigle, Assistant Dean for Graduate Medical Education, and Dr. Wiles are pleased to announce the creation of a new Resident Wellness Center, which will now provide similar needed mental health resources to residents. The Chief Residents Council is developing social networking opportunities for residents, fellows, spouses and families. The Housestaff Emerging Academic Leaders (HEAL) program provides networking and professional development for under-represented groups in medicine.

Conclusions

On their paths to becoming physicians, students and residents will be transformed. Having borne witness to suffering, having made deep connections with patients and colleagues, and having pushed themselves in ways they did not think possible, they will emerge wholly different than when they started. There is no evidence that students and residents want this transformation to be easy or simple. Their personal statements are testaments to a commitment to a path that will surely be hard. They seek challenge, and we would be remiss to deprive them of that reward. However, their destination along this journey is not preordained. Many will find themselves impaired or lost. Many of our own colleagues face this challenge as well with more than one of our own taking her or his life every day. Much more research is needed to learn how to best address these problems. Yet, we have evidence to suggest that through thoughtful curricular design, a balanced approach to workload, investment in resources for mental and physical health, and, perhaps most importantly, mindful role modeling of our own grit and resilience, faculty and educational leaders can successfully mold the healthy, productive physician leaders of tomorrow.

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