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Physician Burnout: An Assessment of Impact, Drivers and Design of Prevention Programs

A Thesis Submitted to the Yale University School of Medicine  
in Partial Fulfillment of the Requirements for the Degree of Doctor of Medicine

by  
David Kumar Dupee, 2021

## PHYSICIAN BURNOUT: AN ASSESSMENT OF IMPACT, DRIVERS AND DESIGN OF PREVENTION PROGRAMS

David Dupee, Cheryl Zogg, Luming Li, and Sandip Mukherjee. Department of Internal Medicine, Yale University, School of Medicine, New Haven, CT.

Burnout merits close study, with particular attention paid to means of quantifying institutional impact, reducing provider burnout burden, and measuring said burden. This study utilized economic and qualitative analyses to indicate institutional impact. It modified and piloted an intervention for attending level physicians. It also proposes a novel wellness program for resident physicians based off of triumphs and gaps in literature. Lastly, it utilizes survey comparison to track overall changes in burnout rate at Yale New Haven Hospital (YNHH). Overall, the cost of physician burnout at YNHH was estimated to range between \$171 and \$233 million annually. Reducing physician burnout to rates consistent with Pierce in similar positions in society would reduce medical error by roughly 20%. Electronic medical records, clinical resources and perceptions of institutional and leadership support of providers were important drivers of physician burnout. The implementation of programs stumbled in the face of administrative roadblocks, but year over year burnout rates shrank by 13% prior to the onset of the pandemic. These results indicated that healthcare organizations have strong ethical and financial reasons to take an active role in reducing provider burnout. Both fund raising and leadership action are critical to the realization of culture and practice that truly prioritizes provider wellness. That being said, even the perception administrative action on behalf of physician wellness seemed to have been protective in and of itself, as seen by the net reduction in physician burnout between system wide surveys.

## **A. Acknowledgements**

This work would not have been possible without the support and guidance of the many mentors and collaborators that I have had the privilege of working with over the past several years. First, a special thank you to Vinita Parkash for first giving me the opportunity to become involved in burnout prevention efforts as a member of a committee of hospital leaders that I truly had no business enjoying. Thank you for believing in an all but complete stranger who at the time had little more than optimism and enthusiasm to offer to the efforts at hand.

I am perhaps in greatest debt to my tireless mentor and patron, Sandip Mukherjee. Dr. Mukherjee's guidance, leadership, and willingness to provide space at the table for young trainees came to define my experience at Yale. Dr. Mukherjee always listened closely to my ideas and questions, and carefully pushed me to bring them to the next level. Our first meetings and conversations turned into side projects, which then morphed into successfully raising \$2,000,000 worth the funding for physician burnout prevention and the launch of a pilot project. Looking back over the past five years, it's hard to believe just how much has happened.

I am grateful to the many collaborators who have supported the work below. Cheryl Zogg has my appreciation for showing me how to go from coded raw data to beautiful outputs that capture the mind. Luming Li took my initial idea for a tri-pronged intervention for resident wellness and ran with it, always encouraging me to be more specific in what it was I was trying to accomplish and bringing new ideas to the forefront. Our program was made much stronger by the idea of including components dedicated to

emotional intelligence screening and skilled building, something that I never would have thought up on my own.

There have also been several patrons without whose support I would not have been able to embark on this wellness journey. In no particular order, thank you Ron Vender, Tom Balcezak, Andrea Asnes, Rosemary Fisher, Joni Hansson, and Adam Mayerson for providing the space for someone as junior as me to weigh in on systems design. Deborah Hodys was instrumental to ensuring that our time banking system was compliant with legal regulations pertaining to physician compensation. Thank you, Steve Huot, for agreeing to meet with an unknown third year medical student and then going on to champion his idea as Yale's sole submission to the AMA's Reimagining Residency grant – I was and remain humbled beyond words.

This work also allowed me the opportunity to interact with two of my great intellectual heroes. Dan Ariely, thank you for speaking with me about the application of behavioral economics to physician wellness. Tait Shanafelt, it was a privilege to meet with you and discuss the direction of physician wellness as a field.

Lastly, it would be remiss to not mention two critical sources of inspiration. Kristine Olson, thank you for your patience and for leaving ample room for medical student contributions to wellness at Yale. And Ronglih Liao, it was truly formative to work under your unique approaches to leadership. Without these experiences, it is unlikely that I would have had the inspiration to pursue research in the field that has imbued the past five years with such a sense of purpose and direction. Thank you.

## **B. Table of Content**

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### C. Introduction

In the years following Shanafelt's landmark 2012 study demonstrating that more than half of a national sample of physicians experienced burnout, addressing physician mental health and wellness has become a top priority.<sup>1,2</sup> Despite the fact that burnout, by definition, is driven by characteristics of work and the work environment,<sup>3</sup> many organizations continue to effectively approach it on an individual, as opposed to an institutional, level. This viewpoint is dangerous because it both misplaces the onus on physicians and misses a major opportunity to improve patient care. Recent studies have revealed the degree to which provider burnout, depression, and suicidal ideation (SI) directly impact safe patient care. Each independently increases the odds of a provider contributing to a medical error by more than two-fold, detracts from professionalism in a dose dependent manner, and results in decreased patient satisfaction.<sup>4</sup>

National data show that residents are especially vulnerable, with more than 70% exhibiting signs of burnout by the end of their intern year.<sup>5,6</sup> Indeed, resident mental health concerns are not limited to burnout: within the first three months of intern year, residents experience a near eight-fold increase in depression and have suicidal ideation 370% more often than before starting residency.<sup>7</sup>

The testimonies of physicians at Yale New Haven Health (YNHH) and the Yale School of Medicine (YSM) reflect these national trends. Internal surveys have shown that 56% of YNHH physicians experience burnout, including more than 70% of residents. Additionally, both women and underrepresented minorities in medicine are disproportionately affected by mental health concerns as compared to their peers.<sup>8-11</sup>

Though the prevalence of physician burnout, depression, and suicidal ideation (SI) is high and attention to the problem has increased, there is no consensus about how systematically to address these problems.<sup>6</sup> There are, however, examples of programs with targeted success. Stanford's early pilot of a burnout prevention program is particularly noteworthy.<sup>12</sup> This program noted that physicians had two primary sources of burnout: work/life conflict and work/work conflict. The former consisted of all-too-common issues with EMR extending into home life and underutilization of programs designed to increase Wellness given the fact that they were seemingly at odds with workplace culture. The latter involved having to juggle the simultaneous identities of clinician, administrator, educator, researcher, and patient advocate. Importantly, Stanford noted that these simultaneous workplace identities were largely not remunerated. Stated differently, RVUs only captured clinical productivity and failed to acknowledge any of the other work that physicians completed as part of their expected contribution to their institutions.

Stanford sought to mitigate work/life and work/work conflict through their Academic Biomedical Career Customization (ABCC) framework. This framework entailed two primary interventions. First, it offered integrated career-life planning which consisted of self-reflection, individualized coaching, and team leader discussions so as to develop customized paths that followed the career trajectories of most interest to the individual. Second, it offered a so-called time banking system wherein essential tasks not traditionally acknowledged by our views would earn an individual credits that could then be redeemed for services on the home and professional fronts. Home services included

options like dry cleaning and meal delivery. Professional services included speech coaching, web design, or even professional grant writing. Over the course of this study, participants reported feeling more supported by Stanford and on average raised \$1.2 million more of grant funding than did their control group peers.

The United States Air Force designed a top-down and bottom-up approach to create a culture that values mental health by offering longitudinal mental health training to both new recruits and senior leadership. This strategy reduced the rate of suicide by 43% over four years and increased mental health resource utilization with efforts designed to reduce the stigma associated with mental health need.<sup>13</sup> Oregon Health Sciences University offers a range of robust, free and easily accessible access to mental health care with longitudinal follow-up, an “adequate dose and booster” approach that has met with success.<sup>14</sup> Despite clear progress, however, both programs cite early identification of those in need of treatment as a fundamental challenge.

While recent scholarship has proposed the identification of burnout symptoms as a surrogate marker for physician dissatisfaction and potential self-harm,<sup>15</sup> there is no expert consensus regarding evidence-based, easy-to-use tools for assessment of wellbeing and behavioral health concerns within the resident physician population.<sup>16</sup> Researchers and advocates alike have called for measures those physicians who experience and who are at high risk to experience stress, disengagement, and negative self-talk.

Diagnosis currently requires an in-person visit, making screening of individuals renowned for having little control over their own schedules a major challenge. The stigma

of seeking mental healthcare as a healthcare professional is also a major barrier.<sup>14</sup> Further, diagnosis is subjective: field trials of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition revealed high variability between physicians even when assessing the same patient for depression (intraclass Kappa of 0.28, 95% CI: 0.20–0.35).<sup>17–19</sup> The subjective nature behavioral health evaluation and infrequent or difficult to obtain mental health appointments may lead to difficulties in longitudinal tracking of incremental changes or declines in psychiatric state.

Currently, there is no digital tool that can predict depression in a clinically meaningful way. While other technologies in development tend to utilize one input or one time point, there has been minimal work analyzing longitudinal, audio-visual data. There are several major advantages inherent to focusing on using video data as opposed to tracking passive data on a phone. Audiovisual data can allow for real-time analysis which is not possible using phone tracking technology this would uniquely allow for incorporation into telemedicine services as well as real-time analysis during in-person appointments.

Previous work in deep learning has highlighted the importance of robust training data. At this time, there are no large, high-quality data correlating audiovisual samples to clinically validated depression scores. The only currently available audiovisual dataset correlated to depression comes from the Audio-Visual Emotion Challenge (AVEC). This publicly available dataset consists of 150 videos paired with BDI-II scores. While AVEC is a compelling starting point, this data has several significant weaknesses. Notably, the audio is exclusively German, as is the study population. This is especially problematic because

prior studies have shown that the accuracy of facial recognition algorithms is sensitive to the demographic composition of both training and test data.<sup>20,21</sup> Numerous papers have also described the importance of diverse patient populations in medical studies in general as well.<sup>22-24</sup> Lastly, The AVEC dataset lacks extreme BDI-II scores particularly at the higher end of scoring with the majority of scores clustered in the low to intermediate range. This lack of data significantly hampers the ability of any algorithms trained on this data to detect more significant depression.

There is thus substantial need to understand burnout's impact and drivers, develop methods of addressing it, and create means of efficiently monitoring it longitudinally.

#### **D. Statement of Purpose**

The overall vision of this body of work was to reduce physician burnout, first at Yale New Haven Hospital, and then nationally by using YNHH as a case study. This process involved several steps, many of which are either ongoing or have been interrupted by the continuing global pandemic. These included:

1. Providing an economic analysis of physician burnout's impact at YNHH to ensure administrative buy-in.
2. Project burnout's impact on patient safety, again to ensure administrative buy-in.
3. Identifying drivers of burnout spanning the many groups that practice at YNHH.
4. Selecting drivers that had the potential to be realistic, impactful change levers and designing a program capable of pulling these levers for the benefit of YNHH is system at large.

5. In recognition of the fact that trainees are most vulnerable to burnout, designing a dedicated burnout prevention program protect trainees from burnout, depression, and suicide prevention.
6. Assessing the efficacy of ongoing interventions and establishing a benchmark by which systemic wellness can be assessed longitudinally.

## **E. Methods**

### **Student Contributions**

DD completed all work pertaining to economic impact and patient safety evaluations. He established the codebook with CZ, but independently utilized Atlas software to code the entirety of the qualitative data set. CZ then performed descriptive statistics on the coded file that she received from DD and summarized the data in the form of a table and figure.

DD proposed modeling a program for attendings off of work previously done at Stanford and conferred with the Stanford team for advice. He collaborated with SM to obtain administrative approval of the program once it had been redesigned to fit Yale's unique needs.

DD also designed the preliminary, three-pronged proposal for the resident Wellness program described below. He worked with SM to bring it before the Office of Graduate Medical Education. Having obtained approval, he worked with LL to further elucidate the proposal. LL's primary contribution to the work below was the inclusion of emotional intelligence components to the interventions overall design.

DD was at the time the leader of Sol Wellness, and so oversaw the data collection trial in conjunction with Ponce Health Sciences University. He independently established the methodology for comparing different burnout measures to one another.

## **Methods Description**

### Part 1: Economic Impact

Stanford's WellMD Center conducted preliminary surveying and exit interviews which indicated that 21% of physicians who reported being burnt out quit or otherwise left Stanford health within two years, presumably due to burnout and not other causes. Given the costs associated with recruiting a new physician and the opportunity cost of clinical interruption upon a physician's exit, Stanford estimated that it would lose 90 physicians in the following year to burnout. This attrition represented an annual financial loss of \$84,000,000 according to their projections.

At the time, YNHH's internal surveying revealed the burnout rate of 58%. Its staff of physicians consisted of roughly 4100 individuals. Given this internal data, the attrition rates, and corresponding costs reported by Stanford, it was possible to conduct a dimensional analysis in order to project the potential impact of physician burnout on YNHH's bottom line. Two separate means of setting up the dimensional analysis arose. In the first, attrition attributable to physician burnout, Yale current burnout rate, physician population size, and the cost of each attrition were incorporated. This method assumed that the 21% attrition rate over the course of two years amongst burnt out physicians was valid. However, interrogation of this projection actually yielded an estimated loss of 123 physicians per year, a full 30% greater than what Stanford later went on to project within

their report. This inconsistency posed a challenge to the legitimacy of the first way of setting up the dimensional analysis. In the second, it was possible to use the projected departure of 90 physicians out of Stanford's population of 3000 physicians and to construct a multiplicative factor based off of the relative burnout rates (58% at Yale to 39% at Stanford), Yale's physician population size, and again the cost per attrition.

### Part 2: Patient Safety Impact

We leveraged published odds ratios and national survey data to estimate the percentage of institutional medical error attributable to physician burnout. These projections center on two measures: the national physician burnout rate of 54% and the odds ratio of committing a medical error of 2.2 (burnt out physicians : engaged physicians).<sup>4</sup>

Using these population-based figures, a hypothetical population of 100 physicians representative of current burnout rates would include 54 physicians experiencing burnout and 46 who were not. To maintain the published odds ratio, burnt out physicians would be estimated to commit 119 ( $2.2 \times 54$ ) medical errors, and engaged physicians, 46 ( $1 \times 46$ ), for a total of 165 ( $119 + 46$ ) errors within the population.

Comparatively, a hypothetical population of 100 physicians representative of the 28% burnout rates seen in other white collar occupations would include 28 physicians experiencing burnout and 72 who were not. To maintain the published odds ratio, burnt out physicians would be estimated to commit 62 ( $2.2 \times 28$ ) medical errors, and engaged physicians, 72 ( $1 \times 72$ ), for a total of 134 ( $62 + 72$ ) errors within the population.

### Part 3: Identifying Burnout Drivers

In order to identify potential burnout drivers, grounded theory applied to open response questions provided in response to a system wide survey sent to every physician within the YNHH network.<sup>25</sup> Two coders independently assessed portions of the more than 80 pages of text generated before convening to consolidate a uniform code book that was both mutually exclusive and collectively exhaustive. This finalized code book was then used to re-code the entirety of the open response text generated using Atlas software.

#### Part 4: Attending Level Burnout Prevention Program Design

The identification of institution specific drivers informed program design for attending level physician burnout. Notably, organizational structure and administration, depersonalization, work life balance, leadership, and appreciation and team dynamics were each high impact drivers that also constituted more feasible change levers than did the two most commonly cited: EMR/documentation and practice resources.

Careful review of the literature identified a program piloted at Stanford that seemed an apt fit given the drivers identified at Yale New Haven Hospital. This intervention is particularly attractive to Yale given its relatively low participant cost roughly \$2500 to \$3000 per participant. Notably, it also directly touched upon the four levers that were identified as most impactful and conducive to direct intervention. Sufficient funding for as many as 200 participants was obtained so that the diversity of YNHH could truly be captured within the pilot of the time banking system.

Administration at Yale identified the time banking system as the most compelling and implementable component of Stanford's ABCC program. Discussions with Stanford study

lead revealed that the actual process of distributing rewards was a logistical challenge managed primarily through an ad hoc paper system. To ensure a more seamless experience for participants, third party vendor All Digital Rewards (ADR) (Scottsdale, AZ) was contracted. Though Stanford's time banking system rewarded numerous nonclinical activities, this proved to be unpopular with administrative authorities at YNHH. It was instead determined that health care professionals who served on eligible hospital committees would be eligible to receive in kind rewards with the cumulative monetary value of up to \$1500 per year. Eligible committees were to be identified by virtue of:

1. The role and expected outcome or work product of the committee
2. The committee's anticipated impact
3. Frequency of committee meetings
4. Cannot include any committee engaged in the development of a clinically integrated network

Time spent in preparing for and attending committee meetings would be documented and credited at fair market value as determined by a group of 3rd party consultants. This time would be recorded on ADR's online platform and be approved of by a program manager. Following approval, points would be added to the given participants account and could then be redeemed for various rewards. Rewards were determined by a steering committee so as to ensure that they were both appropriate and compelling to study participants. This steering committee was appointed by YNHH's Chief Medical Officer (CMO). It was to provide monthly reports to the CMO and that participant eligibility both

prior to the launch yells time banking system and annually thereafter if the program was to continue.

It was required that participants:

1. Be current members of the Hospital Medical Staff and Affiliated Health Care Professional Staff.
2. Be a member of an approved Hospital committee.
3. Have signed a Rewards Program Participation Letter Agreement.
  - i) The Letter Agreement must be signed by all participating YNHH employees.  
For non-YNHH employees, the participating individual's employer must sign the Letter Agreement.
4. An individual is not eligible to participate in the Rewards Program if he/she is an officer, director, key employee, or one of the top five highest compensated employees of the Hospital or another related entity in the YNHH System.
5. An individual is not eligible to participate in the Rewards Program if he/she is a YNHH Department or Section Chair/Chief.

#### Part 5: Trainee Burnout Prevention Program Design

Because physician burnout and wellbeing involve a variety of both structural and personal factors, our proposal seeks to provide residents with systematic culture change, early screening, and treatment. Providing trainees with a revitalized working culture, efficacious screening, and robust treatment, will ease the transition from undergraduate medical training (UME) to graduate medical training (GME) by holistically preventing the dramatic increase in mental health concerns that have traditionally been observed as

early as three months into training. Developing new curricula for both trainees and senior leadership alike, will create a working environment that both values and fosters mental health while simultaneously poising our trainees to be effective leaders who will broadly disseminate YNHH's culture once they enter independent practice throughout the country. Lastly, trainee wellbeing will be supported by longitudinal screening integrated with robust treatment and complimented with skill development.

YNHH's 1,437 residents and fellows at the GME level represent a diverse group of medical professionals from a broad range of backgrounds. YNHH sponsors 25 ACGME accredited residency programs, 72 ACGME accredited fellowships, 14 specialty society/specialty board approved programs, 48 locally approved programs, and programs in podiatry, dentistry, and oral/maxillofacial surgery. 14% of YNHH residents self-identify as members of AAMC defined groups underrepresented in medicine. 47% of YNHH's residents are women and 15% are international medical graduates. Training occurs across a wide range of settings including the flagship academic medical center at YNHH and two community hospitals, Bridgeport Hospital and Greenwich Hospital. The diversity of YNHH training venues and residents and fellows would provide a rich environment for resident wellness projects and would result in findings that are generalizable to a wide range of GME programs nationally.

*Intervention Arm 1. Implement Culture/Practice Environment Change*

Component 1a. Leverage resources of Yale's GME Office, the Teaching and Learning Center (TLC) of Yale School of Medicine, and the Yale Center for Emotional Intelligence (YCEI), to design, implement and evaluate an innovative

curriculum that addresses factors most important to creating a learning environment that supports trainee and mentor well-being

Component 1b. Use lessons learned from the curriculum development and evaluation to create a toolkit of portable resources.

Component 1c. Engage key institutional administrative and educational leaders in the promotion of institution-wide education about physician suicide, depression, burnout, and wellness/wellbeing and their link to quality patient care.

Culture change, namely the authentic integration of physician wellness and well-being into the learning environment, stands at the center of our vision this trainee wellness program. While enhanced screening and an accessible and broad range of treatment resources are integral components of this new culture, these will only be effective interventions if our program fosters an environment in which such resources are used. A standardized package of well-being education applicable across specialties and the cultivation of wellness ambassadors will serve as key drivers of change. This begins with targeted education to enhance knowledge about available resources and how to access them for those most likely to recognize mental health need: residents, program directors, program coordinators, and chief residents.

Building from a wealth of institutional experience in curriculum design through the TLC and YCEI, new curricula will be developed focusing on:

1. Navigating complexity in a fast-paced healthcare setting
2. Interpersonal team dynamics

3. Team communication
4. Emotional perception incorporating self-awareness and self-care
5. Diversity and inclusion emphasizing implicit bias in the workplace
6. Simulations of common, emotionally taxing experiences in residency training.

Curricular offerings will include orientation activities, seminars, and brief, longitudinal programming designed to be easily integrated into already busy and crowded schedules.

For example, systems-based training on navigating complexities of the healthcare system is well suited to peer teaching during orientation, whereas the emotional perception training will require an interactive workshop format. Team work and building effective teams are contained within emotional perception teaching. As an example of longitudinal programming, we will develop a four-part self-care curriculum designed to fit in a thirty-minute window within traditional didactic activities, such as morning report, noon conference, and didactic half-days. Topics will include:

1. Stress and The Stress Response / Mindfulness and Recovery
2. Sleep and Fatigue / Strategies for Success,
3. Dealing with Medical Errors and Adverse Events / Advancing the Conversation Beyond Disclosure, and
4. Self-Care and Well-Being / Practical Nutrition, METs in the Workplace. This curriculum introduces residents to core wellness skills and invites residents to develop a consistent practice.

Topics will be timed to coincide with important milestones: those most relevant to UME to GME transition will be front loaded, whereas those of greatest relevance to

the transition into practice will appear at the end of training. As a complement to the resident-specific curriculum, additional curricula will be developed for residency program leadership and frontline faculty. Beyond topics covered in the resident curriculum, the faculty curriculum will cover building and sustaining a successful wellness program (implementation strategies for creating time and space for wellness), faculty development of wellness champions and program stewards, approaches to destigmatizing mental health issues and promoting resources, and also how to use focus groups to identify high need areas and rotations within an individual program. This type of training is essential to help promote buy-in and support of a culture of wellness not only with program leaders, but also with teaching faculty.

Rigorous evaluation of this multi-part curriculum will inform the development of a toolkit of resources, references, and strategies both for program directors to use locally and for GME offices at other institutions to adapt to their settings.

Beyond curricular redesign, a related strategy for culture and practice environment change is longitudinal engagement among institutional leaders. We will collaborate with program directors and the Office of the Chief Medical Officer (CMO) to expand on existing leadership seminar series to offer trainings on the topics of physician suicide, depression, burnout, and wellness/wellbeing. We recognize the importance of involvement at all organizational levels to the development of a culture of wellness, and we will refine the respective, best approaches to outreach over the five-year project timeline.

*Intervention Arm 2. Develop and Implement Efficacious Screening of Mental Health Issues for Residents*

Component 2a. Implement screening processes to provide reliable and early referral to behavioral competency coaching or confidential psychiatric services for at-risk residents

Component 2b. Leverage cutting-edge technology and tools to enhance resident participation in and user experience with mental health screening.

Early detection is a critical component of any successful mental health treatment model. We will implement streamlined access to traditional, validated mental health screening tools for all residents. These include opt-in self-screening assessments such as the Maslach Burnout Inventory and PHQ-9 for Depression. Screening tools will be easily accessible by way of a centralized GME resource.

Despite high validity and reliability, traditional screening tools have limitations. These include low participation rates, stigma of screening, poor user experience, and logistical challenges of serial administration. To create a culture that encourages residents to take advantage of screening tools, we will provide targeted education about available screening methods and implementation strategies to program directors, program coordinators and chief residents.

We also propose the use of innovative screening tools in parallel with traditional tools to mitigate limitations of the traditional tools. The first innovative screening approach involves a partnership with Sol Wellness, a start-up founded by Yale medical

and computer science graduate students that utilizes artificial intelligence and facial/voice recognition to identify depression and burnout in users. This method is currently able to detect depression with a sensitivity of 70% and is poised to be used in a clinical trial with healthcare professional students at Ponce Health Sciences University increase the algorithm's sensitivity by augmenting the sample size and diversity of its ground truth. Sol also plans to move beyond depression detection, and is in the process of adding burnout detection, too, into its platform. We will partner with Sol to run these clinical trials during the first year of the grant and then launch the completed digital application as a cornerstone of our residency wellness program.

The second innovative screening approach includes the use of a comprehensive measure called the Human Well-Being Index (HWI) to assess and measure wellbeing and the Emotional Perception Test (EPT) to measure of an individual's ability to perceive emotions accurately in others and in oneself. The HWI and EPT were both developed by researchers at the Yale Center for Emotional Intelligence, a world-renowned leader in studying the impact of social and emotional skills on organizations and individuals. The HWI utilizes responder's natural language to describe their emotional experiences in work, school, and life to measure wellbeing. It is currently being validated in K-12 educators, university students, and online workers (approximate total N=5000). We plan to adapt the HWI for residents and validate the measure in this population. The HWI will not only measure wellbeing but will also provide data about the factors that influence resident wellbeing to guide the development of specific interventions. The EPT assesses responders' ability to identify emotions and can in turn bolster emotional perception

thereby providing an opportunity to recognize the need for intervention in themselves and in others.

Used in concert, these tools provide a biopsychosocial approach to data collection and application. The Sol Wellness application tracks a digital biomarker for depression while the HWI and EPT provide psychosocial data about an individual's environment. By tying the biological to psychosocial, we can collect a comprehensive picture of an individual's life and practice environment. We plan to measure data longitudinally to help facilitate transitions, both from UME to GME, and GME into practice.

Increased resident participation in screening is an essential aim of our proposal. We will use quality improvement methodology to maximize uptake of resident screening. We will first employ a qualitative approach to understand barriers to resident participation and then will modify our implementation plan accordingly. As an example, we are aware that time for screening participation is a likely barrier. Anticipating this, we will partner with leaders of current hospital programs to piggyback off of the modified time banking system pilot for attendings (as described in Methods Part 4) to incentivize uptake of these screening tools. While time banking was found to have a positive impact on engagement and promote factors protective from burnout independently, we will use it to incentivize resident use of Sol Wellness' application and HWI and EPT to ensure longitudinal use and early detection of mental health concerns.

Screening data will be utilized both on an individual level by trainees to increase their own awareness of their mental and emotional health as well as in an aggregated, de-identified form to inform programs of areas of need. We anticipate that increased

utilization of all screening approaches will be enhanced using institution-wide training, resources, and support for implementation approaches, including targeted efforts to reduce mental health stigma.

*Intervention Arm 3. Provide Robust Treatment and Support Across a Continuum of Needs*

Component 3a. Optimize the availability of primary and secondary prevention resources for all residents, including those at low risk for burnout

Component 3b. Ensure reliable, early referral to behavioral competency coaching or confidential psychiatric services for at-risk residents

Component 3c. Enhance the knowledge base of residents, program directors, program coordinators and chief residents about available mental health resources

Our treatment plan is divided into two tiers. Tier 1 (low acuity) interventions target the general population of residents who are either at low risk for or have early stage burnout and/or depression. Tier 2 (high acuity) interventions target more advanced cases of both conditions. Using data collected from the Sol Wellness app, HWI, and EPT, as well as traditional screening tools to inform their decision, individuals can opt-in to access recommended treatment plans and options depending on acuity of burnout, depression, and low wellbeing. We will track in a deidentified manner which resources are accessed by trainees, and, through surveys and facilitated focus group discussions, seek input about which resources trainees find to be most helpful, where they perceive barriers to

use, and recommendations to improve the program. This information will be used to adjust resources in an iterative manner from year to year.

Tier 1 will include both primary and secondary prevention strategies. These will include both curricular content on wellbeing and mental health as well as opt-in resources such as use of a mindfulness/meditation application and an online cognitive behavioral training (CBT) tool for immediate treatment to help reduce negative thinking. The Intern Wellness Visits we have already made available to all interns at our institution will be a critical existing component of Tier 1 treatment. These are opt-out, one-hour appointments with counselors at the Employee Family Resource Program that introduce interns to a unique, on-site mental health resource and also aim to reduce stigma surrounding counseling (through direct experience and the explicit expression of institutional support). Trainees can schedule up to six sessions each calendar year at no cost.

Tier 2 treatment, leveraging an already robust mental health referral network developed by our GME office, will provide access to an anonymous opt-in psychiatrist or psychologist for unlimited sessions covered by YNHH in full. This is a particularly important component of the broader project proposal: the incorporation of our institutional experience with and expertise in mental health care of resident physicians into a model that can be used by training programs throughout the country.

The GME Office will disseminate information about these screening tools and available mental health resources in a variety of education settings using a range of strategies to enhance knowledge of this information by residents, program directors,

program coordinators, and chief residents. These will include presentations at orientation, posted information on the GME website, direct email information updates, collaboration with the Resident/Fellow Senate to disseminate information through their monthly newsletter, and updates at monthly Graduate Medical Education Committee meetings. Updates will be shared at monthly program coordinator meetings and the information will be included in the on-boarding curriculum for new program directors and program coordinators. Program directors and chief residents will be encouraged to include this information at regular gatherings throughout the year.

It is important to note that Specific Aim 3 both builds upon the previous two aims. Our project will be effective because the culture change from Specific Aim 1 will lower the stigma associated with identifying mental health need and seeking assistance. Specific Aim 2 will provide trainees with comprehensive, cutting edge, and longitudinal screening that will link them to the most appropriate intervention strategies. In this way, we have designed a program that is both nested and self-reinforcing.

#### Part 6: Intervention Impact Measurement

The latest round of internal surveying has revealed YNHH's burnout level to be 40% using the Professional Fulfillment Index (PFI). It is not possible to directly compare this to 2016's figure of 58% because that survey utilized the Maslach Burnout Index (MBI). However, Trockel et al. administered both instruments to the same study population, allowing for the creation of a conversion factor between the two indices.<sup>26</sup> Utilization of this conversion factor would allow for direct comparison of our 2016 and 2018 surveys.

When administered to the same group of 250 physicians, Trockel et al. found burnout levels of 39% and 49% when using the PFI and MBI, respectively.<sup>26</sup> Thus, a simple conversion can be used to extrapolate the hypothetical MBI percentage (indicated by x) from our PFI burnout level.

## F. Results

### Part 1: Economic Impact

Projection Method One:

$$\begin{aligned} & \frac{21 \text{ physicians lost within two years}}{100 \text{ physicians burnt out}} \times \frac{58 \text{ burn out physicians}}{100 \text{ Yale physicians}} \\ & \quad \times 4100 \text{ Yale physicians} \\ & \quad \times \frac{\$84 \text{ million}}{90 \text{ Physicians lost}} = \frac{\$466 \text{ million}}{2 \text{ years}} = \mathbf{\$233 \text{ million/year}} \end{aligned}$$

Projection Method Two:

$$\begin{aligned} & \frac{90 \text{ Departing physicians}}{3000 \text{ Physicians at Stanford}} \times \frac{58\% \text{ Burnt out at Yale}}{39\% \text{ Burnt out at Stanford}} \\ & \quad \times 4100 \text{ Physicians at Yale} \\ & \quad \times \frac{\$84 \text{ million}}{90 \text{ Physicians lost}} = \mathbf{\$171 \text{ million/year}} \end{aligned}$$

Validating Stanford's Attrition Projection:

$$\frac{21 \text{ Physicians lost within two years}}{100 \text{ Physicians burnt out}} \times \frac{39 \text{ Burn out physicians}}{100 \text{ Stanford physicians}} \\ \times 3000 \text{ Stanford physicians} \\ = \frac{246 \text{ physicians lost}}{2 \text{ years}} = \mathbf{123 \text{ physicians lost/year}}$$

### Part 2: Patient Safety Impact

Given the projected medical error volume in the hypothetical physician population described above, an estimated 72% (119/165) of physician medical errors were committed by physicians experiencing burn out. If this group was not burnt out, it would have hypothetically committed only 54 errors. Thus, 39.4% of physician medical errors within this population may be related to burnout ((165-54-46)/165).

Burnout amongst similarly educated professionals in other fields is ~28%.<sup>2</sup> Reducing physician burnout to this level would hypothetically result in a 134 medical errors, a 19% reduction from the present theoretical error volume.

### Part 3: Identifying Burnout Drivers

Issues with (1) electronic medical records (EMR) and documentation, (2) practice resources, (3) organizational structure and administration, (4) depersonalization and work-life balance, (5) leadership, (6) appreciation and team dynamics, (7) clinical demands, (8) academic marginalization, and (9) compensation emerged as potential drivers when discussing burnout in physician practice (Figure 1). Prevalence of each

category is captured in Figure 1. Overarching concerns from all three practice settings—Hospital Medical Group (Yale Medicine) (N=212), Regional (New England) Medical Group (N=24), and Community Practitioner (N=33) cohorts—were closely aligned (Figure 1).

In each setting, friction induced by EMR integration and increases/changes in required documentation was the most prevalent theme, encompassing 47.6% (101/212), 62.5% (15/24), and 57.6% (19/33) of responses, respectively. Expressed issues included challenges associated with the lack of documentation support, increased time required by administrative duties, receipt of primarily negative systemic feedback, the lack of intuitive/optimized workflow, and the potential harm to the patient experience. One doctor lamented that “charting has overtaken the physician-patient relationship” (Table 1). Another reported that “it is undermining both the cognitive and compassionate aspects of practicing medicine” (Table 1). In the regional setting, physicians reported patients who had observed the same.

31.1% (66/212) of hospital, 33.3% of regional (8/24), and 6.1% (2/33) of community physicians reported issues related primarily to space and staffing allocation when listing practice resources as a source of burnout. Illustratively, as one hospital physician explained, “There are poor support systems in the clinics to ensure that care runs smoothly and that doctors can do what they need to do in order to help increasingly more complex and sick patients. More and more falls on [the doctor’s] shoulders. I am my own secretary, nurse, and social worker” (Table 1).

Furthermore, 30.2% (66/212), 41.7% (10/24), and 24.2% (8/33) of physicians highlighted issues with the organizational structure and administration of YNH, H,

reporting perception of a significant disconnect between senior leadership and front-line physician priorities. Respondents reported that this situation was exacerbated by YNHH's recent expansion and concurrent movement away from departmental/clinic-specific care models. The community cohort noted that, "Upper management [...] does not [appear to] value the ideals or practice management style that [align] with urban primary care," imposing new initiatives "instead of working through our own practice, personal, and business models and helping [to] enhance them" (Table 1). As a result, "...the size of the health system [...] working against proper functioning" (Table 1). Concurrent issues with leadership (26.4%, 8.3%, and 18.2%) and physician appreciation/team dynamics (24.5%, 20.8%, and 15.2%) have done little to slow the tide of concerns regarding depersonalization and work-life balance (27.4%, 45.8%, and 24.2%), clinical demands (23.6%, 25.0%, and 27.3%), academic marginalization (9.9%, 4.2%, and 0.0%), and inadequate/misplaced compensation (7.5%, 8.3%, and 35.6%).

While partitioners in each setting expressed similar overarching concerns, notable differences arose. For example, community physician placed greater emphasis on compensation in the form of overhead and potential litigation. The more academically-oriented physicians with Yale Medicine expressed concerns about their double lives that can result in tension between conflicting responsibilities as clinicians, researchers, educators, administrators, and family members. One physician related that, "I feel like I am gunning the gas pedal, but I'm in neutral gear"—a situation which frequently results in having "to make a decision about who get my time: home or work [...] [s]ometimes my family wins, sometimes the hospitals wins" and a functional reality wherein "academic

medicine does not just consist of patient care” (Table 1). This dichotomy catalyzes feelings of guilt because physicians feel unable “give my all for every instance,” exhaustion as providers consider early retirement or changes in practice setting such as “doing no emergency work,” and the worry “that future clinician investigators may have an even greater challenge succeeding in places like this.” Ultimately, as burnout takes its toll, “What was once a calling is now a job [...] Morale is low [...], [e]veryone seems stressed, [and] [m]edicine is no longer about the patients” (Table 1).

#### Part 4: Attending Level Burnout Prevention Program Design

Obtaining final administrative approval for the time banking system pilot proved to be a major hurdle. First, the introduction of in-kind rewards brought with it several nuanced tax considerations given the Sunshine Act and Stark Laws regarding physician compensation. Next, the administrative committee had difficulty identifying which hospital committees should be eligible given the nuanced political implications of committee selection. Stated more specifically, Yale New Haven hospital allows practicing rights to three major groups: Yale Medicine, NEMG, and CMG. it was important that each of these groups be represented equally so as to not create fissures within the greater YNHH community. However, a new challenge arose when the Dean of Yale School of Medicine decided to withdraw from the pilot by blocking members of Yale medicine from being considered for participation (though monetary funding for the project from Yale medicine was not withdrawn). the issue of setting a precedent for explicitly rewarding behaviors and activities that had previously simply been expected was listed as the primary reason for blocking Yale Medicine faculty from participating. While this simplified

the political ramifications of balancing participants between the different groups with practicing privileges, committee selection continued to be a challenge until finally one committee with equal representation from NEMG and CMG was selected. However, this reduced the total participant count from a target of 200 individuals to less than 15.

The initial cohort of participants greeted this program with enthusiasm. However, even with the added benefit of ADR's platform, entering in points for approval and redemption proved to be a major stumbling block. Only three of the 15 participants actually responded to the project's baseline survey, and even these especially enthusiastic individuals did not fill out the survey longitudinally, leaving the study team with a dearth of data. No rewards were actually redeemed, even before the pandemic hit. As such, the program was ultimately discontinued.

#### Part 5: Trainee Burnout Prevention Program Design

The trainee Wellness program described above was ultimately submitted to the American Medical Association's (AMA) Reimagining Residency Grant. Of the 252 proposals submitted, it was selected as one of 33 finalists. However, the AMA did not include the program described above amongst the 11 awardees.

Despite this fact, a good amount of institutional momentum behind this program had been built over the several months leading up to the final grant submission. The administration had already gone through great pains to establish resources for residents, paying special attention to the fact that utilizing practitioners within the confines of the hospital in which residents worked created substantial reticence towards actually utilizing said resources. Further, Sol Wellness was in the midst of a data collection trial in

partnership with Ponce Health Sciences University that promised to further strengthen the ground truth on which their triaging algorithm was built. Given the homogeneity of the data previously used, this new data collection trial brought with it the promise of greater sensitivity and specificity in the algorithm's recommendations. There were plans, also, to roll out a leaner version of the cultural reorganization/mental health rebranding that the grant application initially proposed.

Unfortunately, none of the new elements came to pass. While mental health resources and community providers are still available to residents, mental health rebranding and digital triaging have largely been placed on hold. There were two major issues above funding constraints that contributed to this loss of inertia. First, and perhaps most significant, COVID-19 came to dominate institutional attention. The global pandemic also served as a major challenge for Sol Wellness, which saw participation and its data collection trial as also decimated by natural disaster and political strife on Puerto Rico.

#### Part 6: Intervention Impact Measurement

Utilization of the approach and values listed above yields the following equation:

$$\frac{x}{40\%} = \frac{49\%}{39\%}$$

Thus, we can extrapolate that YNHH's burnout level as indicated by the MBI would have been ~50% in 2018. The reduction in YNHH's burnout level from 58% to 50% between 2016 and 2018 represents a 13% reduction overall.

## G. Discussion

The work above represents the culmination of more than five years of ongoing research and systems design. When this effort began back in 2016, there was still an element of uncertainty as to whether more resources beyond the customary baselining surveys should be allocated towards the goal of reducing physician burnout. Stated differently, those with experience with clinical work and healthcare delivery recognized the need for resources dedicated to reducing physician burnout but had difficulty convincing purely administrative individuals of the merits of moving beyond great messaging and interventions (such as yoga and mindful moments) that placed the onus on physicians themselves. The economic analysis above represented an inflection point because it translated the pain point of physicians into one readily understood by those without a healthcare delivery background. The economic projections indicated that physician burnout costs Yale New Haven hospital between \$170 and \$233 dollars annually. While this range is admittedly large, even the lower end far outstripped expectations and was sufficiently large to garner administrative buy in and financial support of physician burnout prevention programs. Administrative buy in was only strengthened by further scholarship indicating that physician burnout is not just dangerous for physicians – it also poses a major threat to patient safety. Indeed, the adoption of any other quality initiative that promised a 19% reduction of medical error would likely be utterly uncontroversial and vigorously pursued.

Previous scholarship has established that burnout drivers can vary from institution to institution.<sup>27</sup> However, the qualitative analysis conducted on open responses from a

previously administered wellness survey distributed to the entirety of the YNHH Network revealed themes that were highly consistent with those identified in other studies.<sup>28</sup> With potential drivers having been identified, the next course of action was to identify which drivers actually had potential as change levers. To fundamentally alter electronic medical records and/or clinical resources represented substantial logistical and financial challenges, challenges so large as to render interventions in these areas largely infeasible at the time. However, the next several significant drivers pertained primarily towards provider perceptions of leadership and the institution at large. Given quirks of human psychology that have been well documented by the field of behavioral economics, these represented an optimal intervention opportunity because of the potential to enact large attitudinal changes for only a small cost.<sup>29</sup> The dramatic results of Stanford's ABCC program underscored this point.

At the outset, Yale's time banking system represented the largest single push that it had made towards reducing physician burnout. Unfortunately, its momentum succumbed to issues of regulatory inertia and administrative perception, most notably in the case of Yale School of Medicine's dean, who elected to block Yale Medicine faculty from participating in the pilot. It is curious, however, that neither the Dean nor any of the other financial supporters of the project (most of whom were native to Yale itself) elected to withdraw or reduce the nearly \$250,000 put forward in support of this program despite not actively removing barriers to its implementation. Herein lies one of the central ironies of physician burnout prevention work: while institutions have come to recognize that physician burnout is ultimately deleterious to its workers, patients, and bottom line, the

attitudinal and cultural changes needed to actually reduce burnout's presence continue to lag behind.

The residency wellness program described above would have represented the most comprehensive, systematic approach towards ensuring that trainees would thrive over the course of their post graduate education. Its intended use of cultural redesign, digital screening modalities, and skill development would have constituted arguably the most innovative approach to resident wellness in the country. Unfortunately, a number of logistical challenges intervened. COVID-19 and a dearth of grant funding ultimately made some of the more ambitious components of the cultural redesign untenable. Further, the pandemic severely limited the ability of Sol Wellness to collect sufficient data to increase the sensitivity and specificity of its product, thus rendering it unable to offer a product that rose above the many challenges that face the advent of reliable digital biomarker.

This is not to say that both attending and resident level programs were abject failures. Instead, they represented some of the first real attempts for the institution to place money and new resources into the hands of its practitioners so as to safeguard them from burnout. These systematic shifts also highlighted a transition in attitude from physician burnout being the responsibility of the individual to it being something that the institution itself needed to address and look after.

The next iteration system wide physician burnout assessment at Yale yielded promising results. It was heartening to see that YNHH's burnout level fell to almost exactly at the same level as Stanford's, a far cry from 2016 (when Yale was at 58% and Stanford,

at 38% - both via the MBI).<sup>26</sup> This fall represented a year over year reduction of 13%. While much ground remains to be covered, progress has certainly been made.

The reasons for this reduction were not immediately apparent in the data that was made readily available from the latest round of internal surveying. However, one might recall that the issue of perception regarding institutional and leadership interests in provider well-being was a powerful change lever identified in the qualitative analysis of earlier survey results. It stands to reason, and was anecdotally supported, that individuals within YNHH recognized that the administration was actively working on solutions in the form of focus groups, pilots, and even by joining the ranks of hospital networks that appointed a Chief Wellness Officer. All of these shifts indicate that now, more than ever, the administration recognizes just how much of an issue physician burnout is.

There are, of course, several limitations to each component of this body of work. The economic projections are limited in that they only take into consideration costs incurred by physician attrition. As mentioned previously, physician burnout also has profound implications for medical error, physician efficiency, and patient satisfaction.<sup>4</sup> It is likely that reductions in these parameters manifest as substantial costs to the institution's bottom line – after all, as medical errors decrease, so too will malpractice suits and their accompanying costs. The direct comparison of the total populations of the three groups who hold practicing rights with Stanford's physician population, which is uniformly employed by Stanford Health, is imperfect. Burnout rates did vary between the three broad groups with practicing privileges, and it is not unlikely that attrition rates between them also varied. Unfortunately, attrition rate records were not readily available

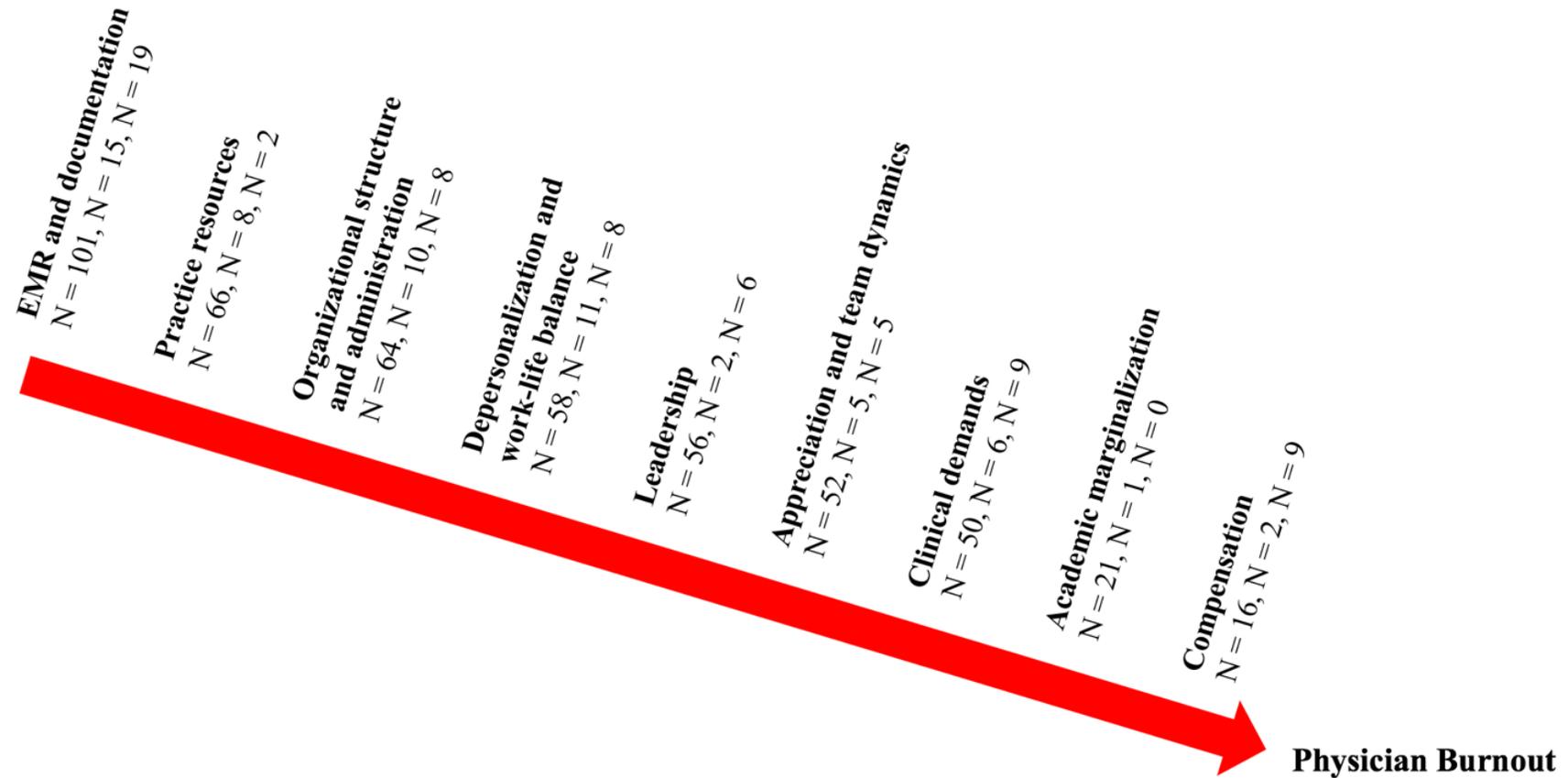
nor were exit interviews conducted, and so the proxies from Stanford's study had to be used. There were many who felt that the final figures yielded by the economic projection are impossibly high. Indeed, an additional study from Stanford published several years after the projections described above indicated that the per employed physician cost of burnout is only about \$7,600 annually, indicating an annual cost of \$31.2 million at YNHH.<sup>30</sup> The publication does not cite reasons for the large discrepancy between these figures and Stanford's earlier scholarship. It is clear that further investigation within this area is necessary, though fully teasing out the individual impact of each contributory variable is hardly a straightforward task.

The comparison of MBI results with PFI results is also not without limitations. Trockel's study utilized only 250 respondents.<sup>26</sup> The Stanford group is currently in the process of creating a more robust "Rosetta Stone" of burnout indices utilizing an n of 1000. This should be used to check these preliminary figures when available. Another major caveat is that this 13% year over year reduction was observed in the year 2019 - well before COVID-19 struck. Since then, an explosion in physician burnout and other negative mental health conditions has been well recorded globally. This explosion is exacerbated by the fact that hospitals must now over deploy their providers and are unable to pursue physician wellness as robustly given severe budget constraints brought on by the novel coronavirus.

Clearly, physician burnout is a complex and ongoing challenge. In the face of COVID-19, the need for further study and innovative interventions has never been greater. Future investigation into the creation of reliable biomarkers for benchmarking

and ongoing screening is clearly a critical need. Novel approaches to ensuring wellness to providers of all levels must continue to be pursued. Above all, ongoing partnership between health care providers and hospital leadership will be critical to the realization of approaches capable of safeguarding physician well-being, and in so doing, protecting patient safety and hospital solvency.

## H. Figure and Table



**Figure 1.** Themes from discussions of burnout in physician practice. Numbers indicate the number of responses from the Hospital Medical Group (N=212), Regional (New England) Medical Group (N=24), and Community Practitioner (N=33) cohorts, respectively.

**Table 1.** Select quotations from qualitative interviews with the Hospital Medical Group (N=212), Regional (New England) Medical Group (N=24), and Community Practitioner (N=33) cohorts

| Qualitative Theme        | Select Hospital Medical Group Quotations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Select Regional Medical Group & Community Quotations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I. EMR and documentation | <ul style="list-style-type: none"> <li data-bbox="485 537 1255 634">• “The EMR is not optimized for use by physicians. Little consideration seems to be made regarding work flow.”</li> <li data-bbox="485 667 1255 959">• “I wish that we had more support for documentation. I love spending time with patients, and I find it a waste to then have to type everything that we discussed into a computer after they have left [...] [The system] is not intuitive. I am disappointed with how obstructionist it is to getting work done.”</li> <li data-bbox="485 992 1255 1024">• “The feedback that we get [...] feels mostly negative.”</li> <li data-bbox="485 1057 1255 1222">• “The EMR has added 1.5 hours every day to my workday in the office. I then come home and work on it until I go to bed. EPIC is all that I do [...] The hospital administration fails to realize the burden that EPIC</li> </ul> | <ul style="list-style-type: none"> <li data-bbox="1262 537 1992 634">• “[...] It’s the excessive time spent in documentation. I spend at least 50% more time than prior to [EMR].” (<i>community</i>)</li> <li data-bbox="1262 667 1992 699">• “Epic is constant. The inbox never stops filling.” (<i>community</i>)</li> <li data-bbox="1262 732 1992 959">• “We continue to see patients at the same rate as previously but the EMR has increased the workload. We have to simplify the EMR and probably slow down the pace of patient care to do data entry.” (<i>regional</i>)</li> <li data-bbox="1262 992 1992 1222">• “As a patient said the other day, I spend more time on the computer that I do with the physical. I do not need [the EMR] to do my job. It is required to document my job for others that are not involved with patient care.” (<i>regional</i>)</li> </ul> |

has placed on physicians who see patients on a daily basis. They must reduce the data entry tasks that have become my prime occupation.”

- “Charting has overtaken the physician-patient relationship. Because I refuse to stare at a computer screen while in the presence of my patients, I am often forced to document after work.”
- “The EMR [...] is more focused on using caregivers for data entry, and I think that it is undermining both the cognitive and compassionate aspects of practicing medicine.”

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## II. Practice resources

- “In my clinic space, I have only 1 room and am told that I need to see 12 patients per session. I am rooming my patients and doing nursing-level duties [instead of spending time with my] complex patients going into hospice. This is not acceptable.”
  - “Residents spend time calling pharmacies for medication reconciliation. I would appreciate resources allowing for pharmacists to make these phone calls, allowing residents to focus on making medical decisions about what home medications to continue rather
  - “I don’t have all that I need to do a good job.” (*regional*)
  - “Give us scribes. Give us nurses, not only [medical assistants], who can provide more patient care.” (*regional*)
  - “Some of the shifts are understaffed, especially nighttime medicine attending shifts in step down units.” (*regional*)
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than chasing down phone numbers and staying on hold with outside pharmacies.”

- “I spend way too much time outside of the office worrying about finalizing documentation, clicking all sorts of boxes in EPIC, responding to phone calls, answering patient emails, checking labs, and trying to convey the results of those labs to patients. I find it very frustrating that a large number of tasks that previously have been done by ancillary staff are now done by the physician.”
  - "There are poor support systems in the clinics to ensure that care runs smoothly and that doctors can do what they need to do in order to help increasingly more complex and sick patients. More and more falls on their shoulders. I am my own secretary, nurse, and social worker."
  - "The [patient care assistants] and other nursing support staff are not held accountable nor are they allowed to practice to the full capacity of the licensure, leaving doctors and residents to do most tasks unnecessarily."
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| III. Organizational structure<br>and administration | <ul style="list-style-type: none"> <li>• "The size of the health system is working against proper functioning, as we no longer know whom to contact to get things done, and the people in charge no longer are directly connected to the facts on the ground. To use a military analogy, the 'generals are nowhere near the battlefield.'"</li> <li>• "I work hard to try and improve metrics for an organization that I do not feel always has either my or my patients' best interests in mind. If you are going to push people to achieve better patient satisfaction, early discharges, etc., then you need to be reasonable with how that data is presented and listen to front line staff when they give suggestions about it."</li> <li>• "It feels like hospital/departmental administration does not share the values of its primary care physicians or see any reason to be concerned about the organization and delivery of primary care."</li> <li>• "There needs to be a mixing of goals/endpoints such that some financial outcome multiplied by happiness is the true measure of</li> </ul> | <ul style="list-style-type: none"> <li>• "I am continually disappointed that the hospital approaches improvement initiatives as new things to be imposed on us, instead of working through our own practice, personal, and business models and helping [to] enhance them." (<i>community</i>)</li> <li>• "Upper level management [...] does not value the ideals or practice management style that aligns with urban primary care. They exhibit an incredible lack of understanding about the intensity of our work and the time it takes to document, fill out forms, make phone calls, etc. with inadequate support staff." (<i>community</i>)</li> <li>• "My major stress is unfair restriction of my privileges for artificially justified political reasons which now makes my practice less satisfying and my overhead too high. This is approaching the point of forcing retirement before I intended." (<i>community</i>)</li> </ul> |
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success. Shooting for just one will save money and lose people, the other will make everyone happy while we go out of business.”

- “My perception is that the clinical care I provide, the teaching I engage in with fellows/residents/students, and the administrative role I play in our practice are not overtly valued [...] The focus is constantly on doing more in less time. I am not a ‘clinician,’ I am a ‘clinical educator’, and I feel that I am being pushed to perform like the former.”

- “There needs to be much greater recognition of the amount of time required to do all that is expected. The burden of meeting all the new standards (quality performance, health maintenance, unending documentation, *ad nauseam*) coupled with the pressure to see more patients in shorter times is very draining.” (*regional*)

- “[There needs to be] outreach to pharmacies sending in incomplete and duplicate script requests [and an] ambulatory council to guide and coordinate disparate and often conflicting efforts across the system. Make it easier to take good care of our patients is the bottom line!” (*regional*)

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IV. Depersonalization and work-life balance

- “I feel like physicians have very little control over the process. I don't know the schedulers. I don't see my clinical secretary. I don't choose my APRN or my [medical assistant], and they don't choose me. We are all just placed together.”
- “My biggest frustration is that once I get home from my workday, my limited amount of patience is stressed, and it is very difficult to keep

- “I feel very alone in this.” (*community*)

- “I had to cut back my hours to alleviate my stress. It has helped, but I regret the lack of continuity to my patients. However, work-life balance was bad and my family was regularly seeing and feeling my stress.” (*regional*)

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my patience with the people who matter most to me--my family. I am a mom, a wife, and a clinical educator who has a huge patient load. The balance is what I find the most stressful and that is what makes me question my professional decisions."

- "I have a special-needs child at home. My spouse is often the one dealing with his issues. I feel guilty about spending so much time at the hospital when I am on call. This leads to frustration at home. [...] I often have to make a decision about who gets my time: home or work. Sometimes my family wins, sometimes the hospital wins."

- "What was once a calling is now a job. EMR, meeting my 'stretch' goals, monitoring RVUs, and especially Press Ganey has taken all the joy out of practicing medicine. The doctors do not talk at lunchtime anymore. Everyone is too busy trying to complete charts and EMR. Same with the staff. Morale is low in the office. Everyone seems stressed [...] Medicine is no longer about the patients." (*regional*)

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#### V. Leadership

- "Having supportive physician leaders who value what we do 'in the trenches' would help. The institution justifiably rewards research, and I am grateful to work in a stimulating atmosphere, but the hospital should do better rewarding excellence in clinical care."
  - "Care teams (nurses, APRNs, administrative assistants) all report to various leadership. Direct feedback about how well they work as a team is not sought and excellent performers are not rewarded."
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- "The executives are completely inaccessible and it feels as if the midlevel administration [...] is unresponsive or obstructive when presented with concerns."
  - "I believe that a source of frustration among physicians is the perception that many decisions regarding funding on staffing and patient care are made by non-physicians. [...] [The] perception is that hospital leadership do not act as if they are one the same side as the physician staff."

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 VI. Appreciation and team

*Metrics*

## dynamics

- "In the ED, the vast majority of patients are the worried well. They do not have significant acute medical problems, and yet, we feel pressured to treat their pain too aggressively, practice defensive medicine, order lots of unnecessary tests, and make patient satisfaction a top priority. Ultimately, patient satisfaction is a very poor indicator of quality medicine, so we have all of these external forces pushing us to practice medicine in ways that we don't think are really best. [...] I feel a lot of pressure from administration to
  - "I am not a restaurant hoping for a five-star review. I am a physician, a professional." (*regional*)
  - "Receiving monthly report cards on whether I have met all of the metrics and the results of patient surveys is demeaning and degrading (mine are always in the 99th percentile)." (*regional*)
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coddle patients in order to boost patient satisfaction, at the cost of doing the right thing."

*Top-down appreciation*

- "In [an ideal] environment, workers in primary care would be managed to practice at 'the top of their license' in a collaborative, results-driven environment. The fact that primary care is not valued [...] has many adverse effects on the work environment."
- "The hospital treats the physicians and staff very poorly [in the ED] to the point where I have contemplated doing no emergency work--a bold statement for a surgeon."
- "How about a little more respect and courtesy from the academic and hospital-based folks who are supposed to be my colleagues? I am tired of the condescension, the demands, and the dismissive attitude. If nothing else, I am the source of their referrals. Talk to me!" (*regional*)

*Team dynamics*

- "We have different work styles. For instance, I start at 7:30 am, but somehow, I am the only one of my team members who arrives on time. I see my last patient at 4:30 pm, yet many of my staff leave for the day at that time. It seems incongruent and ineffective for patients to miss components of routine care because our schedules are not aligned."
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- "I am tired of always having to problem solve for [...] members of the team because they feel 'uncomfortable' or the requested task is not 'within their job description'."

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VII. Clinical demands

- "I feel like I am gunning the gas pedal, but I'm in neutral gear."
  - "As a medical director, the expectations as both a clinician and administrator are unreasonable and untenable."
  - "Academic medicine does not just consist of patient care, as a physician scientist you need to balance research projects with clinical endeavors."
  - "I feel like I am on a treadmill and keep being asked to do more and more, faster and faster [...] There is more stress on how fast we do things than on how well we do them."
  - "My workload is such that I feel sometimes I cannot fully service the patients as I might otherwise, which is disheartening. I cannot give my all for every instance."
- "I have been in practice over 28 years and have worked harder [with] much longer hours seeing fewer patients in the past 3-5 years than I ever have. For this reason, I anticipate retiring in 2 years." (*community*)
  - "I feel I keep needing to do more in order to break even." (*community*)
  - "My stresses come from being overbooked. Even when I ask to adjust my schedule, the requested changes are not implemented." (*regional*)
  - "We got feedback that primary care doctors are supposed to spend only six minutes of 'doc time' with [the] patient. Ridiculous! We will case an error and harm." (*regional*)
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VIII. Academic  
marginalization

- "All of my stress is related to research activities and is due to lack of grant funding, lack of guidance/mentorship, lack of institutional support, and misplacement of values by the administration."
  - "My greatest concerns are in regard to the disconnect between what I feel is success as compared to that of the senior administrators. While opening clinical trials, building clinical programs, and engaging the community, colleagues, and students are my main priorities, successes in these areas are not recognized if they are not accompanied by RVU quotas and timely clicking and closing of specific EMR encounters."
  - "As a clinician investigator, I encounter the usual challenges that come with this job description, primarily the challenge of finding time to stay on top of science and funding. I worry that future clinician investigators may have an even greater challenge succeeding in places like this and finding acceptable work-life balance."
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IX. Compensation

- "I feel that I need to stay on top of our billing staff in order to collect payments for the challenging work that I do. The work is meaningful, interesting, and I truly love it--having someone to ensure that I am being compensated for the work would give me more time and improve my quality of life."
  - "I am most stressed about working enough to consistently cover (exceed) my overhead."
  - "[There is a need for] better alignment of purported values of the institution (research, treatment of all patients regardless of ability to pay, education of medical students/residents) with compensation."
  - "I worry about overhead, making ends meet at work."  
(*community*)
  - "[...] payers, governmental oversight, threat of litigation with poor compensation" (*community*)
  - "As a primary care physician, I do not feel I am being paid a competitive salary for all the work I do, including my administrative work. I must clock in and out regularly to ensure that I work my 40 hours; however, if I work 45-50 hours, my time is not accounted for in any way nor is any of the work done at home." (*regional*)
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