Attending to the Most Important Instrument in the Practice of Medicine

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Director of Scholarship & Health Promotion
Stanford Medicine WellMD Center
How important is caring for the most important instrument in the practice of medicine?

How alert, cognitively fit, precise, creative, and persistent do physicians need to be?

➢ Think of the kind of doctor you want taking care of you or your family member in an emergency.
Burnout in the U.S., Physicians & General Population

Burnout

- Satisfaction Work-life Balance

Shanafelt, Mayo Clinic Proceedings 90:1600
Rationale for Improvement of Clinician Wellness: The Moral Case
Burnout is associated with adverse health outcomes.

- Diabetes  (Melamed, et al. 2006)
- Heart disease  (Honkonen, et al., 2006)
- Depression  (Oskrochi et al., 2016)
Well Physicians → Higher Clinical Performance

Clinician Performance

Physicians who are well:

• Higher patient satisfaction (Beach, et al. 2013)
• More likely to support preventive health practices in patients (Duperly, et al., 2009; Frank, et al., 2008; Frank, et al. 2013)
• Lower medical error rate (Fahrenkoph, et al. 2008; Shanfelt, et al. 2010; West, et al. 2006)
• Better patient outcomes, e.g. decreased post-hospital discharge recovery times (Halbesleben and Rathert, 2008)
Physician burnout may impair patient recovery.

- Study of 178 physician/patient pairs
- Patients were asked: “In your estimation, how many days did it take you to recover fully (regain normal functioning) after your hospitalization?”

Avoiding burnout is necessary but insufficient.
Professional Fulfillment: A Better Goal

Happiness, meaningfulness, self-worth, self-efficacy and satisfaction at work.

Professional Fulfillment
Quality of Life (QOL) Scores, Comparing Physicians With and Without Burnout by Professional Fulfillment Category

WHO QOL Scale Score Differences in Standard Deviation Units

- **Physical**: Burned out (comparison group: n=98) - 0.56, Not burned out but not fulfilled (n=75) - 1.00, Not burned out and fulfilled (n=77) - 1.22
- **Psychological**: Burned out (comparison group: n=98) - 0.45, Not burned out but not fulfilled (n=75) - 0.73, Not burned out and fulfilled (n=77) - 0.92
- **Social**: Burned out (comparison group: n=98) - 0.26, Not burned out but not fulfilled (n=75) - 0.52

[Bar chart illustrating the differences in QOL scores]
Rationale for Improvement of Clinician Wellness: The Business Case
11% of physicians experiencing burnout in 2013 may have left their job by 2015, as a result of burnout.
Effect of burnout on physician turnover persists after controlling for possible confounding variables.

<table>
<thead>
<tr>
<th>Association between physician attrition and burnout</th>
<th>OR</th>
<th>95% CI</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unadjusted Model</td>
<td>2.40</td>
<td>1.38-4.19</td>
<td>0.002</td>
</tr>
<tr>
<td>Adjusted Model 1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.41</td>
<td>1.38-4.21</td>
<td>0.002</td>
</tr>
<tr>
<td>Adjusted Model 2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.82</td>
<td>1.56-5.10</td>
<td>0.001</td>
</tr>
<tr>
<td>Adjusted Model 3&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.77</td>
<td>1.47-5.25</td>
<td>0.002</td>
</tr>
<tr>
<td>Adjusted Model 4&lt;sup&gt;d&lt;/sup&gt;</td>
<td>2.68</td>
<td>1.34-5.38</td>
<td>0.005</td>
</tr>
</tbody>
</table>

<sup>a</sup>. Adjusted for Surgical Specialty.
<sup>b</sup>. Adjusted for Surgical Specialty, Hours Worked per Week Category.
<sup>c</sup>. Adjusted for Surgical Specialty, Hours Worked per Week Category, and Sleep-Related Impairment.
<sup>d</sup>. Adjusted for Surgical Specialty, Hours Worked per Week Category, Sleep-Related Impairment, Anxiety, and Depression.
Financial Cost of Physician Turnover Attributable to Burnout

- Lost Clinical Revenue adds about $1.6M in losses per physician *(Forbes 2016)*

- Work-life is the second most common reason cited for leaving *(Sloan/ACE, 2012)*
Wellness may reduce liability risk.

- Analysis of 438 physicians who completed wellness survey in 2013
- Wellness scores matched with Unsolicited Patient Complaints based PARS scores.
- Self-defined burnout: **132% greater odds of UPCs** (OR = 2.32; 95% CI =1.49-3.61)
Wellness may reduce liability risk (UPCs).

<table>
<thead>
<tr>
<th>Wellness Measure</th>
<th>Ordinal Logistic Regression: Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Exhaustion</td>
<td>1.54 (1.10-2.15)</td>
</tr>
<tr>
<td>Interpersonal Disengagement</td>
<td>1.87 (1.18-2.98)</td>
</tr>
<tr>
<td>Sleep-related Impairment</td>
<td>1.40 (1.001-1.96)</td>
</tr>
<tr>
<td>Professional Fulfillment</td>
<td>0.58 (0.41-0.84)</td>
</tr>
</tbody>
</table>
Rationale for Improvement of Clinician Wellness: The Tragic Case
Future physicians have excellent mental health...

...before their training begins

Doctor Commits Suicide Using Fentanyl at Froedtert Hospital

Why so many doctors kill themselves

What I’ve learned from 949 doctor suicides

Suicide Is Much Too Common among U.S. Physicians

It’s the second-leading cause of death for residents—and the leading cause for male residents

Physicians Experience Highest Suicide Rate of Any Profession
Physician, First Do No Harm—To Yourself

Suffering in Silence: The Scourge of Physician Suicide

A physician suicide: covered up with a tarp and silence

Why Do Doctors Commit Suicide?

Physicians have the highest suicide rate of any profession. So why haven't you heard about it?

Nearly 400 doctors commit suicide each year

Depression and Suicide Among Physician Trainees

Experts Address Risk of Physician Suicide

Health Science

What I’ve learned from my tally of 757 doctor suicides

SILENT EPIDEMIC

American Doctors Are Killing Themselves and No One Is Talking About It

It’s estimated that at least 400 U.S. doctors kill themselves every year.

The occupation with the highest suicide rate

Doctors committing suicide at high rates
Physician Suicide

A meta-analysis comparing the suicide rate of physicians to that of the general population found:

• Male Physicians commit suicide at 1.41 times as the rate of males in the general population

• Female Physicians commit suicide at 2.27 times the rate of females in the general population

(Schernhammer and Colditz 2004)
Rationale for Improvement of Clinician Wellness: The Regulatory Case
• ACGME Common Program Requirements
  – Example 1: “Residents must be given the opportunity to attend medical, mental health, and dental care appointments, including those scheduled during their working hours.”
  – Example 2: “Provide access to appropriate tools for self-screening; and, provide access to confidential, affordable mental health assessment, counseling, and treatment, including access to urgent and emergent care 24 hours a day, seven days a week.”
  
https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRs_2017-07-01.pdf
Asking physicians to heal themselves is not the complete answer.

Efficiency of Practice Strategies

Strategies that help physicians efficiently provide the high quality of care they want to provide for their patients.

- Efficiency of Practice
- Professional Fulfillment
- Personal Resilience
- Culture of Wellness
Physicians spend more time with EHR than with patients.

Modifiable Predictors of Burnout

Demand Control Model (Karasek et al. 1981)
Problem: Amount of Time Spent Documenting and Complying with Administrative and Regulatory Requirements

Innovation:

• Scribing
• Medical assistant order entry
• Standardized prescription renewal

Problem: Computerized Technology that Pushes More Work to Physicians

Innovation:

- In-box management
- Verbal messaging

Effect of interventions to improve work conditions in primary care

Satisfaction, % improvement

0.00%  5.00%  10.00%  15.00%  20.00%  25.00%

Control  Intervention

Culture of Wellness Strategies

Strategies that promote appreciation, self-care, and compassion for ourselves, our colleagues, and our patients.
Gratitude at Work: a Driver of Professional Fulfillment

- Very Low Gratitude
- Low Gratitude
- Moderate Gratitude
- High Gratitude

% With High Professional Fulfillment:
- Very Low Gratitude: 24%
- Low Gratitude: 39%
- Moderate Gratitude: 54%
- High Gratitude: 78%
Gratitude at Work Scale

Answer the following questions based on your experience during the last past two weeks:

<table>
<thead>
<tr>
<th>During the past two weeks…</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
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</thead>
<tbody>
<tr>
<td>Colleagues and coworkers thanked me for specific things I did for them</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>My direct supervisor, chief or chair expressed appreciation for things I did for them, or our team</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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## Gratitude at Work Scale

Answer the following questions based on your experience *during the last past two weeks*:

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<tbody>
<tr>
<td>I thanked colleagues and coworkers for specific things they did for me</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>I expressed sincere appreciation for things my direct supervisor, chief or chair did for me</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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<td>[ ]</td>
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</tbody>
</table>
Support from leadership increases professional fulfillment.

Perceived Support from Leadership Scale includes:

- Appreciation
- Inclusiveness and High Expectations
- Support
Which Leadership Questions Are Action Items?

My immediate supervisor:

- Holds career development conversations with me
- Empowers me to do my job
- Encourages me to suggest ideas for improvement
- Treats me with respect and dignity
- Provides helpful feedback and coaching on my performance
- Recognizes me for a job well done
- Keeps me informed about changes taking place at Stanford
- Encourages me to develop my talents and skills
- **Overall, how satisfied are you with your immediate supervisor?**

(Shanafelt et al, 2015)
Leadership matters.

“Good Bosses Create More Wellness than Wellness Plans Do”

Emma Seppala, PhD

Science Director of Stanford University’s
Center for Compassion and Altruism Research and Education
Personal Resilience Strategies

Strategies that cultivate individual health-promoting skills, attitudes, and behaviors.
Mindfulness practice does help.


• Asuero AM, Queraltó JM, Pujol-Ribera E, Berenguera A, Rodriguez-Blanco T, Epstein RM. Effectiveness of a Mindfulness Education Program in Primary Health Care Professionals: A Pragmatic Controlled Trial. *Journal of Continuing Education in the Health Professions*. 2014;34(1):4-12.

Therapist Mindfulness = Patient Improvement

- Therapists in training (n = 18) randomized to meditation training or not
- Outcomes in patients with a therapist participating in meditation (n = 63) compared with outcomes in patients with control group therapist (n = 61)

Patients of therapists who participated in meditation training had significantly better outcomes on:

- Global Severity Index
- Depression
- Somatization
- Insecurity in Social Contact
- Obsessiveness

Patients of therapists who participated in meditation training had significantly better outcomes on:

- Anxiety
- Anger/Hostility
- Phobic Anxiety
- Psychoticism
- Paranoid thinking did not improve significantly, but trended in the expected direction, $p = 0.16$.

Physician self-valuation: prioritization of personal wellbeing coupled with growth mindset perspective towards personal imperfection.
LAD Engagement Model

1. **Listen**: Seek to understand specific determinants of burnout
2. **Act**: Empower physicians to develop and implement solutions
3. **Develop**: Develop new physician leadership through this work
4. **Repeat**: Iteratively develop, implement, and evaluate solutions for continuous improvement.

## Self-Valuation

How often have you experienced the following during the past two weeks?

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<th>Always</th>
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<tbody>
<tr>
<td>a. When I made a mistake, I felt more self-condemnation than self-encouragement to learn from the experience</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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<tr>
<td>b. I was less compassionate with myself than I was with others</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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</table>
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<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>c. I put off taking care of my own health due to time pressure</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>d. Taking care of my needs seemed incompatible with taking care of my patients’ needs</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
## Self-Valuation & Physician Wellness

<table>
<thead>
<tr>
<th></th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>-0.40</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-0.34</td>
</tr>
<tr>
<td>Professional Fulfillment</td>
<td>0.37</td>
</tr>
</tbody>
</table>
## Self-Valuation & Physician Wellness

<table>
<thead>
<tr>
<th></th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damaged Interpersonal Relationships</td>
<td>-0.39</td>
</tr>
<tr>
<td>MIND Diet score</td>
<td>0.13</td>
</tr>
<tr>
<td>Sleep Related Impairment</td>
<td>-0.35</td>
</tr>
</tbody>
</table>
Self-valuation is associated with lower burnout

Prevalence of Burnout by Self-Valuation Quartile

- Lowest Quartile (n=350): 60%
- Second Quartile (n=318): 36%
- Third Quartile (n=277): 23%
- Highest Quartile (n=298): 10%
Self-Compassion Associated with Lower IL-6 (a Marker of Inflammation)

Fig. 3. Mean day 1 IL-6 levels at baseline and 30 and 120 min post-TSST for participants above and below the mean on self-compassion (ns = 20 and 21 for the high and low self-compassion groups, respectively).

An Actionable Model of Physician Distress

- Self-Devaluation
- Suboptimal Performance
- Burnout
Does desire to be a perfect doctor cause burnout?

- Pure Personal Standards → Positive Mental Health *(after adjusting for Maladaptive Evaluative Concerns)*

- Variables that mediate negative effect of MEC on mental health
  - Contingent Self-Worth
  - Self-Concealment

Self Valuation (a.k.a. Self-Compassion) and Clinical Performance

Self valuation is associated with lower self-reported medical error rates ($r = -0.21; p = 0.001$).
A Case for Sleep Health: Does sleep related impairment cause physician burnout?

Causal criteria:

• Strength of the association
• Dose response relationship
• Correct temporal relationship
• Control for possible confounding variables
• Consistency of results
• Biologic plausibility
Strength of Association

Percent of house-staff reporting significant burnout

- Low Sleep Impairment
- Some Sleep Impairment
- Moderate Sleep Impairment
- High Sleep Impairment

- Self-Defined Burnout
- Stanford Scale Burnout
Change is Possible Strategy at Multiple Levels.
Why do you care about physician wellness?
Acknowledgements: WellMD Team Colleagues

• Tait Shanafelt, MD
• Maryam Hamidi, PhD
• Dan Murphy, MD
• Bryan Bohman, MD

• Sheralyn Stoltz
• Nikitha Menon
• Jill Springer
• Michelle Dekcard
Strength of Association

2013 Stanford Physician Wellness Survey

• Pearson correlation between sleep related impairment and burnout: **0.56 (large effect size)**
## Temporal Relationship & Control for Potential Confounders

<table>
<thead>
<tr>
<th></th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td>3.623</td>
<td>0.000</td>
</tr>
<tr>
<td>Burnout in 2016</td>
<td>0.609</td>
<td>11.930</td>
<td>0.000</td>
</tr>
<tr>
<td>Sleep Related Impairment in 2016</td>
<td>0.164</td>
<td>3.216</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Dependent Variable: Burnout score in 2017
Consistency of Results Across Studies

• Across multiple surveys at a growing number of institutions every survey demonstrates a strong relationship between sleep related impairment and burnout
What about Biologic Plausibility?

What biologic mechanisms plausibly explain the relationship between sleep related impairment and burnout?

- Inadequate sleep
  - Intermittent lapses in attention
  - Inaccurate nonverbal reflection of others’ emotions (empathy)
  - Decreased affect regulation
  - Inaccurate reward/incentive processing
  - Decreased hippocampal encoding of long term memory

Sleep-deprivation $\rightarrow$ Decreased Aversive Stimulus Processing

Sleep-deprivation $\rightarrow$ Impaired Reward and Incentive Processing

(Krause, Simon et al. 2017)
Lack of Sleep During Call Increases Risk-Taking

Sleep-deprivation → Impaired Hippocampal Memory Processing

(Krause, Simon et al. 2017)
What Level of Sleep Deprivation Affects Performance?

• Two consecutive nights with less than 6 hours of sleep are associated with decreases in performance which last for a period of six days

Sleep Related Impairment Impairs Performance

2016 Stanford Physician Wellness Measures Validation Study

• Pearson correlation between sleep related impairment and self-reported medical errors = 0.30 (moderate effect size)
What Causes Sleep Related Impairment in Physicians?

• EHR work in the late evening
• Insomnia
• Shift work and on call responsibilities
  • Mismatched Circadian Rhythm
• Insufficient time available for sleep
  • Excessive Workload
  • Children at home
• Insufficient time allocated for sleep
  • Sleep may not be prioritized