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SPECIAL SECTION

WELL-BEING *in* MEDICINE

GUEST EDITORS: LAUREN ALLISTER, MD; KELLY D. HOLDER, PhD

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Well-Being in Medicine

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GUEST EDITORS

On the cover: Photos are from the Lunch & Be series held for medical students at Brown as part of the Well-Being Program in the Division of Biology and Medicine. These photos show participants in an October 2024 session titled "Release. Relax. Rejuvenate," which focused on the importance of music and dance. Information on the series and upcoming sessions can be found here: https://well-being.biomed.brown.edu/events/lunch-be-series

[PHOTOS: BROWN DIVISION OF BIOLOGY AND MEDICINE, WELL-BEING PROGRAM.]

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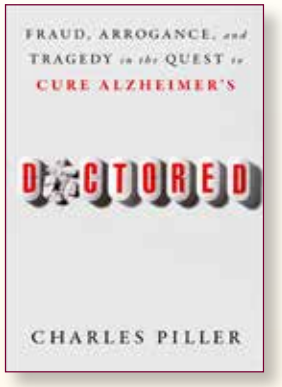


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From Why to How: Practical Pathways to Healthcare Well-Being

LAUREN ALLISTER, MD
KELLY D. HOLDER, PhD
GUEST EDITORS

The well-being of physicians and healthcare professionals is central to maintaining a functioning healthcare system. Healthcare workers have always faced numerous threats to their well-being, but the COVID pandemic brought many of these long-standing issues to the forefront of public consciousness. The demanding nature of medical work creates high levels of stress and burnout through multiple factors: constant exposure to human suffering, extended work hours, unpredictable schedules, and mounting administrative responsibilities. Additionally, healthcare professionals often struggle with limited autonomy over their work environment, risk of physical injury, emotional strain from challenging patient interactions, and financial pressures. These combined stressors can profoundly affect both the mental and physical health of those working in healthcare settings. The personal consequences of these stressors in physicians include both physical consequences such as fatigue, exhaustion, and risk for motor vehicle accidents, and psychological consequences such as stress, disruptive behavior, mood disorders, depression, and substance abuse.[1] Healthcare workers are at an increased risk of suicide, and preventative interventions along the stress-to-suicide continuum are of paramount importance.

The effects of these stressors extend well beyond the individual well-being of each healthcare worker affected. On an institutional level, there are also significant costs associated with the well-being of the workforce. The financial cost of burnout to healthcare, including attrition of the workforce, is estimated to be $4.6 million dollars annually.[2] Patient care is also impacted. Physician depressive symptoms impact attention to detail and decision-making and have been associated with medical errors.[3]

The complexity of healthcare workforce well-being demands a holistic, systems-level approach that recognizes the intricate relationships between individual resilience and organizational infrastructure. Seemingly disparate elements of well-being are fundamentally interconnected: effective well-being strategies extend beyond individual self-care and resiliency programming. While these elements remain critical, they must be integrated into broader systemic interventions that reshape healthcare delivery and academic medicine environments, organizational cultures, and support structures. This synergistic approach requires simultaneous investment in individual mental health resources and strategic modifications to healthcare systems, creating a comprehensive framework that addresses both personal coping mechanisms and the structural challenges that contribute to professional burnout and psychological strain.

Our task in this issue was to illuminate well-being programming that we see working within our community and for our colleagues. There has been significant study devoted to why well-being work is important. We wanted to contribute to the evolving body of literature focusing on how to address the complex issue of well-being in medicine. This issue of the *Rhode Island Medical Journal* is a snapshot of solutions that can aid with shifting the culture to one of improved well-being. We specifically tasked our authors, local and national leaders in well-being, to share with us solution-driven, locally effective programs that could be incorporated across different specialties and institutions. There is no one solution. Efforts must include initiatives at the individual, team, and system levels. While this issue is not exhaustive of all solutions, it is an opportunity to illustrate the importance of ongoing discussion, research, and support for healthcare workforce well-being, because when healers thrive, everyone benefits.

In this issue, **DRS. HAMPTON** and **HOLDER** describe a breathing strategy, a seemingly simple but effective strategy for recentering and refocusing that can be used easily with individuals and teams. **DRS. ALVAREZ**, **WINKEL**, and **KARAMATSU** show how three well-established business models can be adapted to aid the implementation of varied physician well-being initiatives. **DRS. HARDY**, **GOLD**, and **BURROUGHS-RAY** share a curriculum created to promote and support medical residents' well-being. **DRS. AGARWAL**, **VAIDYANATHAN**, **BRANDON** and **BEIDAS** illuminate an approach that uses analytics to improve well-being throughout an organization. **DR. CATANESE** shares a way to create structured opportunities to develop personal and professional skills that aid with improving well-being and enhancing job satisfaction for faculty. **DRS. BREWER** and **ANTICO** share the importance of evidence-based and user-centered design, which involves engaging physicians in the development and execution of wellness programs. **DRS. STUMP**, **McCRAY**, and **SHAFI** describe a way to aid learners and faculty in cultivating attention and self-awareness using narrative medicine. **DEEYA PRAKASH**, a current pre-medical undergraduate student, and **DR. LAUREN ALLISTER** share a

hopeful perspective for the culture of well-being in medicine from a future physician.

Established medical journals are stressing the importance of addressing burnout and moral injury amongst the healthcare workforce. Healthcare workers, long acculturated to prioritizing others at the expense of self, are recognizing the importance of self-care as part of successful and sustained careers. Individual and departmental programming is important but not mutually exclusive from the systemic change that also needs to take place. This work requires a bottom-up, top-down approach to create new roots of cultural change. We are buoyed by this important call to action and the work being done in the well-being realm across medical specialties and institutions. Our authors have inspired us with the work they are doing on the well-being front. We hope that this issue, and continued broad attention to this important work, will keep healthcare worker well-being on par with all the other metrics of a successful healthcare system. This issue is our response to this collective call to action for moving from the "why" we need this work to the "how" to create change and sustain a culture of well-being in medicine.

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Disclosures

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Before We Begin

BRITTANY STAR HAMPTON, MD; KELLY HOLDER, PhD

Obstetrician/Gynecologists (Ob/Gyns) are surgeons. Much of our work is done within the unique environment of the operating room (OR); a space that has its own rules of engagement. It is a dynamic environment which necessitates the seamless cooperation of different members of the healthcare team, often integrating trainees, and at the same time depends on the mastery and command of the surgeon. The OR is tenuous, where something can change any moment – injury, hemorrhage, patient decompensation – leading to a bad outcome.

Psychological and psychosocial physician stress can occur due to the direct responsibility for patient well-being, including the emotional toll of surgery such as bad outcomes and patient death. Each traumatic event, paired with other demands of being a physician today, creates a downstream effect of additional challenges. Burnout, for example, has personal consequences for physicians that can include decreased productivity, job dissatisfaction, risk for motor vehicle accidents, poor self-care, depression, substance abuse, and suicidality.[1] To ensure a sustainable and enduring career, there is a benefit to physicians integrating daily wellness practices into their medical practice to create a buffer to these known hazards. The unique stress of our work within the OR calls for incredible focus and resilience, and the Ob/Gyn surgeon is uniquely situated to bring that focus and resilience into the OR for the entire team with simple wellness practices.

All they need to do, in fact, is breathe. Practice mindful breathing, that is. Mindful breathing refers to intentionally focusing one's attention on the breath in a non-judgmental and present-moment way. It involves bringing awareness to the sensations, rhythm, and quality of the breath while letting go of distractions and thoughts.[2] Mindful breathing can be done through various techniques such as diaphragmatic breathing, box breathing, breath counting, or focused breathing awareness. Such breathing has proven beneficial for physical and mental well-being as it can successfully lower anxiety, depression, and distress.[3-7] Mindful breathing has a known positive impact on physical health, which includes improved circulatory and respiratory function, reduction of pain, and improved sleep.[8-10] The beauty of breathing is that it is incredibly simple, yet a powerful tool for enhancing overall mental health and wellness. It is readily available to individuals and can be practiced in various settings. To harness this tool, all that is required is intentionality and a moment to pause and engage in one of the numerous methods of mindful breathing.

And the Ob/Gyn surgeon, the lead individual in that complex OR environment, can bring the intentionality of integrating this wellness technique into their everyday medical practice in a way that affects the entire OR team. Many years ago I decided to try it out. And I'm still doing it with every OR case.

We roll to the OR, transfer the patient to the table, and do the time out. The team is abuzz with preparation and anticipation. I stand at the bedside for the induction of anesthesia. I might remember a bad outcome, anticipate a difficult case, hold stress from the day. My heart rate might rise. I scrub in and we do the second time out. And then we breathe, the entire team, together. "And we will take two mindful breaths before we start." We pause to take a mindful breath in, and then out. And a second one, in and out. The clamor of the PACU washes away. My heart rate slows. Anxiety, anticipation and stress lessen. All at once, the team is synchronized. The patient and our work come into focus, recentered. And then we begin.

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Disclosures

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From Why to How in Physician Well-Being: Aligning Strategies for Sustainable Cultural Change in Healthcare

AL'AI ALVAREZ, MD; MAIA WINKEL, MD; MIA L. KARAMATSU, MD

ABSTRACT

BACKGROUND: The evolution from the Triple Aim to the Quintuple Aim has highlighted physician well-being as crucial for healthcare delivery. While evidence-based interventions exist, implementing sustainable well-being initiatives remains challenging for healthcare organizations.

DESIGN: This report demonstrates how three established business frameworks – McKinsey 7S Framework, Kotter's 8-Step Change Model, and PESTEL analysis – can be adapted to implement physician well-being initiatives in healthcare settings.

RESULTS: These frameworks analyzed three initiatives: promoting break-taking behaviors (McKinsey 7S), transitioning from a sick-call to a back-up call system (Kotter's model), and updating Work-Family-Career Guidelines (PESTEL). Each framework provided unique insights: 7S enabled systematic organizational alignment, Kotter's model facilitated change management, and PESTEL assessed external factors influencing implementation.

CONCLUSION: Adapting business frameworks to healthcare settings provides structured approaches for implementing physician well-being initiatives, demonstrating how cross-sector tools can advance the Quintuple Aim while addressing systemic drivers of burnout.

KEYWORDS: healthcare leadership, physician well-being, strategy, change management

BACKGROUND

The well-being of physicians has emerged as a pressing concern in healthcare, with a growing body of evidence linking physician burnout to negative impacts on patient care, increased healthcare costs, and challenges to workforce sustainability. Despite efforts to address these issues, such as the progression from the Institute for Healthcare Improvement's original Triple Aim[1] – which targeted patient care, population health, and cost – to the Quadruple Aim[2] that included clinician well-being, and later the Quintuple Aim[3,4] incorporating health equity, significant barriers to implementation persist. The COVID-19 pandemic further underscored the importance of integrating well-being and health equity into care delivery. However, many healthcare organizations continue to struggle with translating well-being strategies into sustainable practices due to resource limitations and cultural resistance. The growing data on physician burnout underscores its detrimental effects on patient care quality, increased healthcare costs, and significant impact on the sustainability of the healthcare workforce.[5-10] These findings have driven more intentional efforts to address physician well-being through targeted interventions and organizational strategies.

While evidence-based interventions for improving physician well-being are well documented, a critical gap remains in the sustainable and widespread integration of these initiatives across clinical settings.[11-13] The challenge is moving from understanding what fosters a supportive, well-being-focused environment to effectively executing customized interventions that meet each institution's unique needs. This gap presents an opportunity to bridge the divide between theory and practice by addressing system-level barriers that prevent the adoption of well-being initiatives. Effective implementation also requires overcoming the common "us vs. them" mindset by fostering collaboration between clinicians, institutional leaders, and administrators to align well-being efforts with organizational goals.[14]

Addressing this gap is crucial not only for enhancing physician well-being but also for improving healthcare quality, achieving health equity, and ensuring workforce sustainability. With increasing knowledge and awareness, Well-being 1.0, which primarily focuses on individual resilience, needs to transition into Well-being 2.0, emphasizing systemic action and leadership to drive cultural change.[14] This shift is guided by the Stanford Professional Fulfillment Model[15] and Wellness-Centered Leadership (WCL) principles[16], which focus on cultural transformation, practice efficiency, and support for personal resilience.

Applying structured frameworks from other industries can help solve complex challenges in healthcare. This manuscript uses three proven business models – the McKinsey 7S Framework, Kotter's 8-Step Change Model, and PESTEL analysis – to guide physician well-being initiatives. These models were chosen for their systematic, adaptable approaches to organizational change. The McKinsey 7S Framework aligns key organizational elements – strategy,

structure, systems, shared values, style, staff, and skills – to address systemic barriers.[1] Kotter's 8-Step Change Model provides clear steps for managing change, including building urgency, forming coalitions, and embedding new practices into culture.[18] PESTEL analysis examines external factors – political, economic, social, technological, environmental, and legal – that influence success and sustainability.[19]

This paper will also demonstrate how adapting these frameworks can facilitate the implementation of well-being initiatives in healthcare. Practical examples, such as stocked emergency department snacks, a back-up call shift-credit system, and revised new parent guidelines, will illustrate how integrating these strategies bridges the gap between knowledge and action. By adapting these proven frameworks, healthcare organizations can achieve sustainable improvements in physician well-being.

DESIGN

In this report, we apply a multifaceted design to adapt established frameworks for implementing sustainable physician well-being initiatives in healthcare. The McKinsey 7S Framework ensures organizational alignment,[17] Kotter's 8-Step Change Model facilitates the change process,[18] and PESTEL analysis addresses external factors that influence implementation.[19] These frameworks, commonly taught in business school and healthcare leadership programs, provide a shared language for physician leaders and hospital executives. This shared language helps move beyond the "us vs. them" mindset, fostering collaboration with hospital leadership to align goals and implement meaningful change, a cornerstone of Well-Being 2.0.[14]

The design process incorporates stakeholder feedback, identifies organizational challenges through data analysis, and develops tailored strategies that integrate seamlessly into existing workflows. By leveraging this shared understanding, the frameworks support alignment across leadership levels, secure stakeholder buy-in, and anticipate resistance to change. This approach ensures that well-being initiatives are seen as essential components of clinical practice rather than add-ons. Continuous evaluation and refinement further enhance the sustainability of these programs and support scalability across departments or systems.

By utilizing these frameworks, the design bridges the gap between theory and practice, enabling targeted actions to improve practice efficiency, foster resilience, and create lasting cultural change. This methodology offers a replicable model for other healthcare institutions aiming to implement effective physician well-being initiatives.

RESULTS

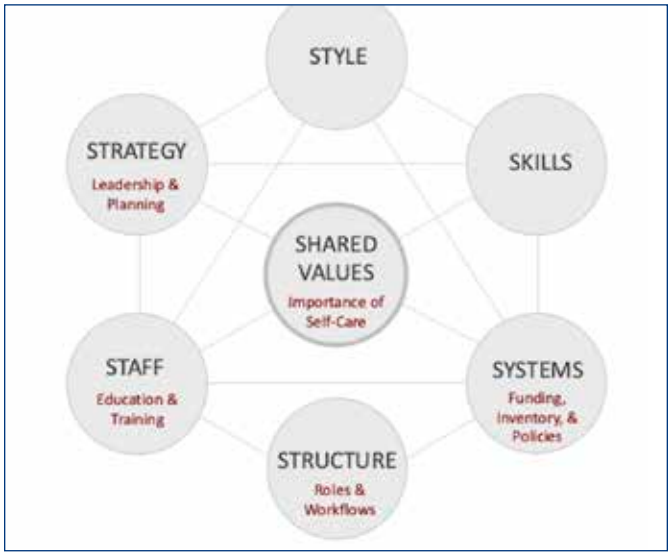
Supporting Break-Taking Behaviors in the Emergency Department

The McKinsey 7S Framework (**Figure 1**) provides a comprehensive approach to effectively implementing the break-taking initiative in the emergency department (ED), ensuring that all organizational elements are aligned and optimized. By addressing strategy, structure, systems, shared values, style, staff, and skills, the framework facilitates seamless integration of the initiative into the department's operations, advancing a culture of wellness.

As an illustration of several nodes within the McKinsey 7S framework, the structural dimension of the initiative involved establishing defined roles and workflows for managing logistics centered around the installation and maintenance of a stocked refrigerator to ensure the consistent availability of nutritious snacks and beverages in the ED. Systems were developed to support funding and inventory management for sustainability, incorporating feedback mechanisms to maintain stock levels throughout the week. Additionally, policies were designed to align with Occupational Safety and Health Administration (OSHA) guidelines, Joint Commission standards, and state regulations, ensuring that break-taking can be integrated without compromising patient care. This structural alignment, supported by strategic planning, aimed to embed break-taking as a routine aspect of ED operations, with shared responsibilities across physicians, nurses, and support staff to sustain the initiative.

Incorporating shared values is essential to fostering a cultural shift that views regular breaks as integral to clinician well-being and the delivery of high-quality patient care. This

Figure 1. McKinsey 7S Framework for Supporting Break-Taking Behaviors in the ED



Adapted from https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/enduring-ideas-the-7-s-framework#

initiative reframes break-taking from a perceived sign of weakness to a valued practice that enhances personal health and professional performance. Leadership style played a pivotal role in modeling and promoting these values, with leaders actively encouraging staff to participate and reinforcing the importance of self-care. Staff engagement is also critical, with education and training to build the necessary time management skills and integrate breaks into daily workflows. Through this comprehensive approach, the initiative aligns all seven elements of the 7S Framework, facilitating a cultural transformation that embeds wellness as a core organizational value in the ED.

The McKinsey 7S Framework helps ensure the success of this initiative by providing a structured lens through which each aspect of the organization is considered, allowing for targeted adjustments that promote alignment and coherence across all components, thereby driving sustainable change.

Moving from Sick-Call to Back-Up Call: A Human-Centered Approach

Kotter's 8-Step Change Model (**Figure 2**) provides a structured framework for implementing organizational change by building urgency and guiding people through the transformation process. In the context of transitioning from a traditional sick-call system to a back-up call system in the ED, this model supported the establishment of a human-centered approach that recognized and compensated on-call availability, assisted colleagues dealing with illness or significant life events, and fostered a culture where taking necessary time off was accepted and encouraged. Even the choice of language, moving from "sick-call activation" to "back-up call activation," helped reinforce the initiative by framing the system as supportive and proactive rather than reactive, thereby reducing any stigma associated with calling out.

As an illustration of this model, creating a sense of urgency was crucial for initiating the change. This involved clearly communicating the risks associated with the previous sick-call culture, where clinicians often felt pressured to "suck it up" and work despite being unwell, resulting in burnout and compromised, and even unsafe, patient care. Presenting data on the negative effects of presenteeism – such as increased fatigue-related errors, diminished job satisfaction, and long-term health impacts – emphasized the immediate need for a more supportive system.[20] To further convey the gravity of the problem, wellness champions conducted listening sessions and met directly with key stakeholders, including frontline clinicians and leadership, to gather first-hand accounts of the challenges faced under the previous system. These sessions not only validated the concerns but also helped tailor the urgency message to resonate with different audiences. Framing the back-up call system as a solution that safeguarded individual well-being while enhancing department performance and patient safety generated strong momentum for change.

Forming a powerful coalition was equally critical to driving the initiative forward. This coalition was composed of a diverse group of stakeholders, including ED physician leaders, physicians with caregiving responsibilities, physicians heavily involved in research, administrators, frontline physicians, and wellness champions, all of whom were committed to embracing the change. Including representatives from various roles ensured that multiple perspectives were considered and helped build broad-based support across the department. Wellness champions within the coalition played a key role by using insights gathered from listening sessions to engage directly with key stakeholders, ensuring that the proposed changes addressed the specific needs and concerns of the physician group. The coalition leveraged personal stories and experiences to highlight the benefits of the back-up call system, advocated for essential policy updates, and engaged their peers in discussions about the cultural shift towards a more compassionate and sustainable approach to shift coverage. By empowering this coalition, the department successfully piloted the model with the desired outcomes, leading to its implementation and adoption in the ED.

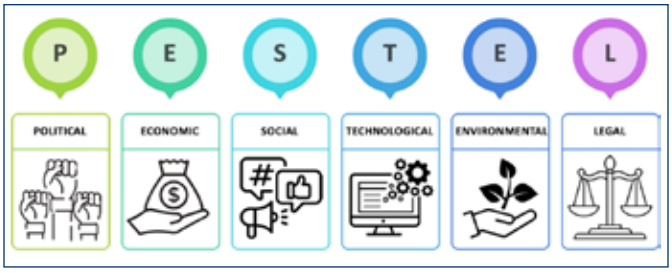
Figure 2.

Adapted from https://www.kotterinc.com/methodology/8-steps/

Minimizing the Impact of Work on Personal Relationships by Updating the Work-Family-Career Guidelines

A PESTEL analysis (**Figure 3**) provides a comprehensive framework for examining external factors that impact an organization, focusing on Political, Economic, Social, Technological, Environmental, and Legal aspects. Using this approach to support new parents with caregiving responsibilities, Stanford Emergency Medicine updated its Work-Family-Career Guidelines to better address the external pressures and needs faced by physician parents. Socially, there is a growing emphasis on work-life balance, particularly in high-pressure fields like emergency medicine, where the demands of clinical duties can conflict with personal responsibilities. The updated guidelines aim to normalize practices such as flexible scheduling, comprehensive family support resources, and back-up childcare, making it easier for physicians to manage their personal and professional demands. By encouraging all parents – including fathers and non-birthing parents – to fully utilize their leave benefits, the guidelines help shift cultural perceptions, reduce the stigma

Figure 3.



Adapted from https://www.lexisnexis.com/en-int/glossary/compliance/pestel-risk-monitoring

associated with taking time off, and promote a more equitable distribution of caregiving responsibilities across genders.

Physically, the updated guidelines prioritize providing suitable accommodations that support the needs of new parents returning to work. Such accommodations include creating designated lactation rooms within or near the ED, equipped with ergonomic workstations, refrigerators, and comfortable seating to ensure privacy and convenience. Flexible scheduling options, such as eliminating night or on-call shifts during critical stages of pregnancy and the first year postpartum and limiting physically demanding tasks, help to minimize the physical strain on physicians and contribute to a safer, more supportive work environment. Additionally, offering support for emergent childcare resources can alleviate stress by providing options that accommodate the non-traditional hours typical in emergency medicine, allowing physician parents to focus on both patient care and their families.

Integrating these physical and societal factors into the Work-Family-Career Guidelines not only supports individual well-being but also aligns with broader institutional goals of fostering a culture of wellness. By addressing societal expectations for work-life balance and implementing practical physical accommodations, the guidelines help create an environment where physician parents feel supported in both their professional and personal lives. This approach not only enhances job satisfaction and retention but also reinforces the department's commitment to leading by example in creating a family-friendly workplace in academic medicine.

CONCLUSION

The successful implementation of physician well-being initiatives requires a structured approach that bridges the gap between knowledge and action. By adapting established business frameworks – McKinsey 7S, Kotter's 8-Step Change Model, and PESTEL analysis – healthcare organizations can systematically tackle the challenges of implementing sustainable well-being programs. Our analysis of three successful initiatives shows how these frameworks can facilitate the shift from Well-being 1.0 to Well-being 2.0, advancing beyond individual interventions to systemic change. Through aligning organizational elements, managing change effectively, and accounting for external factors, these frameworks provide a replicable strategy for fostering a culture of wellness, improving practice efficiency, and supporting personal resilience.

Integrating Wellness-Centered Leadership principles with these business frameworks establishes a strong foundation for sustainable change. Organizations can create environments where well-being initiatives can flourish by focusing on caring about people, cultivating relationships, and inspiring change. Success depends on collaboration between clinicians, administrators, and wellness leaders, underpinned by data-driven metrics and continuous feedback. As healthcare organizations pursue the Quintuple Aim, this structured approach offers a clear pathway forward, addressing both the immediate needs of physicians and the long-term sustainability of the healthcare workforce. Future research should validate these implementation frameworks across various healthcare settings and develop standardized metrics to measure their impact on physician well-being and organizational outcomes.

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Med-Peds PROuD: A Pilot Study of Targeted Professional Development to Promote Well-Being Among Internal Medicine-Pediatrics Residents

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ABSTRACT

INTRODUCTION: In physicians, burnout is highest during training, with 60.3% of residents reporting at least one symptom of burnout. The Accreditation Council for Graduate Medical Education Common Program Requirements establishes standards to promote well-being. We developed a professional development curriculum to target this requirement.

METHODS: 60-minute post-graduate year (PGY)-specific professional development workshops were offered to internal medicine-pediatrics (Med-Peds) PGY-1-PGY-4 residents at a large academic institution. We applied descriptive statistics for quantitative data using Likert-scale questions.

RESULTS: Eight Med-Peds professional development (PROuD) sessions occurred from July 2023–June 2024, with 44 residents participating in 1–2 sessions comprising 5–10 residents per session. The survey response rate was 53% (n=62), and 45% reported feeling 'less stressed' or 'no stress at all' after attending. 93% of participants viewed the workshop favorably and 96% expressed interest in future sessions.

DISCUSSION: This pilot study demonstrated that residents experienced decreased stress and increased interest in future sessions after attending targeted PGY professional development workshops

KEYWORDS: graduate medical education, well-being, professional development

INTRODUCTION

The Accreditation Council for Graduate Medical Education (ACGME) establishes and monitors professional educational standards for all medical residency and fellowship programs in the United States.[1] Through the Common Program Requirements (CPR), ACGME ensures that all residencies and fellowships have a shared foundation of core competencies that are measured by corresponding milestones. Developed in 2019, the Clinical Environment Review (CLER) Program is comprised of five focus areas, one of which is well-being.[2,3] Implementation of these CPR competencies and CLER focus areas can be challenging given the unique needs of training programs, but the impact on trainee success is clear.[4] One study showed an association between burnout, measured by Maslach Burnout Inventory scores, and decreased milestone performance for pediatric post-graduate year 1 (PGY-1) residents.[5] To assist programs in addressing these barriers to implementation, ACGME provides a collection of well-being resources to support sponsoring institutions, programs, and individuals within graduate medical education (GME) in learning about and improving various aspects of well-being. The guidance provided in these resources should be tailored to the unique needs of each residency program based on identified drivers of burnout, helping institutions and programs create ethical, humanistic educational environments that address local needs effectively.[6]

As a workplace phenomenon, burnout comprises depersonalization, emotional exhaustion and feelings of inefficacy.[7] During the physician life cycle, burnout is highest amongst residents and fellows at 60.3% compared to medical trainees (55.9%) and early career physicians (51.4%).[8] Extending beyond the trainee, burnout impacts every aspect of their professional identity: patient care, professionalism and even academic achievement.[9-11] Burnout isn't stagnant either, and as residents matriculate through their training it worsens. One study noted 47% of PGY-2 residents experienced burnout compared to 37% of PGY-1 and 43% of PGY-3 residents.[12] The increase in supervision responsibility, larger patient load and teaching expectations that characterize the supervisor role likely contribute to these worsening numbers. Time spent engaging with electronic health records (EHRs) is also often directly correlated with burnout rates, and 37% of PGY-2s report completing work on EHRs at home in the previous month compared to 31% of PGY-1s.[12] Additional risk factors include imposter syndrome and challenges with residency program leadership, which could offer additional opportunities for intervention.[13,14] Navigating and mitigating burnout in residency can seem daunting; however, we propose an evidence-based approach centered around the Job Demand-Control (JDC) Theory to address this challenge.

The JDC theory is one of the most widely studied models of occupational stress. This framework predicts employee well-being based on the imbalance between job demands (workload) and job control (decision latitude).[15] Jobs with high

demand and low control, referred to as 'high strain' jobs, lead to increased stress, burnout, and negative health effects.[16,17] The increased workload (high demand) and decreased control over work-scheduling (low control) in residency are characteristic of a 'high strain' job. Employees in jobs with high demand and high control experience increased learning, motivation and development of skills.[15] However, employees in 'high strain' jobs can experience these same benefits by integrating resources and social support as described by the Job Demand-Control Support (JDCS) model.[18-20] Through resources, such as professional development and mentorship, residents can be better equipped to mitigate burnout and increase their decision latitude. These concepts, and the JDCS model served as the basis for the creation of an internal medicine-pediatrics professional development (Med-Peds PROuD) curriculum to improve resident well-being.

We aimed to demonstrate that physician well-being can be amplified and stress reduced by an intentional professional development curriculum designed for Med-Peds resident physicians at a large academic institution. The Med-Peds PROuD curriculum aligns with the CPR of professionalism and the CLER focus area of well-being to promote their implementation in a residency program. Designed to improve resident physicians' preparation for independent practice, this curriculum fosters individual resilience and supports residents in managing the unique demands of residency while improving well-being and job satisfaction.

METHODS

Setting and Population

Participants included were residents in the Med-Peds residency program at University of Tennessee Health Science Center (UTHSC), a large academic institution. The professional development sessions were voluntary and offered in the evening in the homes of the faculty members leading the sessions. The residents were divided into cohorts based on their PGY and each cohort was assigned a faculty mentor as the session facilitator. Since this was a pilot, there were only two sessions held for each cohort of residents. Each session included 5–10 resident participants and one faculty facilitator.

Facilitators

The Program Director and/or an Associate Program Director of the UTHSC Med-Peds residency acted as facilitators for each session. Due to their unique role in providing mentorship, career advising, navigating post-residency opportunities, and successfully completing two board exams, members of program leadership were well equipped to provide this education.

Table 1. Professional Development Session Topics

	PGY-1	PGY-2	PGY-3	PGY-4
Fall Session	An Insider's Guide to Surviving the Switch	Resident Wellness	Dusting off Your CV Before Your Graduation Date	Navigating the Next Steps: Preparing for Life After Residency
Spring Session	Beyond Doubt: Navigating Imposter Syndrome	Get Scholarly – Med Ed Abstract Workshop	A Year from Now: Imaging Your Ideal Career	Life After Residency: Reconnecting to Your Why

Intervention

Schedule: Each cohort had two sessions that were tailored to the unique needs of each PGY, resulting in a total of eight 60-minute sessions across the 2023–2024 academic year. Sessions were held in the evening to limit conflicts with existing mandatory didactics. Each PGY cohort had two sessions, one in the fall and one in the spring, that were tailored to the unique needs of their class. The time between the sessions ranged from 6–8 months. Polls were used to schedule the sessions to maximize attendance. Residents reported that they preferred well-being-related activities to be after hours in a faculty member's home based on an internal well-being needs assessment conducted in 2022.

Session Structure: The JDCS model highlights the ability of professional development and mentorship as resources that can decrease the strain experienced in high-stress and low-control occupations such as residency. Each session provided participants with group mentorship from program leaders, as well as specific professional development skills that were applied during the session. Each session's organization varied but generally comprised at least two components: brief didactics and facilitated large group discussions in a supportive environment. At least one session for each PGY cohort incorporated a hands-on activity that allowed participants to leave with a tangible item after the session (i.e., edited curriculum vitae, well-being toolkit). The session topics were chosen based on the ACGME CPR milestones for all trainees in ACGME-accredited programs. In addition, the results from the above-mentioned internal well-being needs assessment were also used to identify Med-Peds specific areas of interest for inclusion. There was no required pre-reading for the sessions. For the last five minutes of each session, time was allotted for participants to complete the optional survey. Session themes are outlined in **Table 1**.

Data Acquisition and Analysis

At the end of each Med-Peds PROuD session, learners were provided with a QR code to an anonymous survey. Participants were allotted five minutes in person to complete the survey, which included three items assessing topic relevance, acquisition of new information and faculty content expertise scored in a 5-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree).

RESULTS

Med-Peds PROuD sessions were available to all four years of Med-Peds residents at one academic institution (n=51) over one academic year (2023–2024). Participation was voluntary, and the sessions did not replace existing required didactics. The number of attendees for each class-specific session ranged from 5–10 residents, with an average attendance rate of 61% for the respective PGY cohort (each PGY cohort ranged from 12–14 residents). A total of 44 residents participated in 1–2 sessions during the year. The attendance rate was higher during the fall sessions, with an average attendance rate of 75%, compared to 47% in the spring. In total, eight sessions were conducted across all PGY levels with 32 survey responses (response rate 52%; see **Table 2**).

Overall, residents reported an impact on their stress levels after these sessions, with 45% of all respondents feeling 'less stressed' or 'no stress at all' after attending. While the perceived stress level of respondents after their respective session varied between classes, across all PGY levels, a smaller percentage of respondents reported feeling 'very stressed' or 'stressed' following the spring sessions compared to the fall sessions (see **Table 3**).

Quantitative Data

On average, responses to all Likert-scale questions were rated as positive (mean >3/5), as opposed to neutral (3/5) or negative (<3/5) (see **Table 2**). Over 96% of responses ranked 4–5/5 for the topic being pertinent to stressors specific to their PGY level (n=60) and the acquisition of new information during the session (n=60). Facilitators were rated as being knowledgeable regarding the workshop topics (mean 4.9/5). 93% of participants viewed the workshop format favorably, and 96% were interested in attending future sessions.

Qualitative Data

In this pilot study, the qualitative questions were limited to recommended changes to the sessions and solicitation of topics for future sessions. There were conflicting responses about the timing of the sessions, with one participant responding, 'would prefer to have over lunch,' compared to another participant who commented, 'loved the format at an attendings house!' Multiple residents requested earlier start times and suggested topics (i.e., curriculum vitae, cover letters, job opportunities) to be covered in other sessions. For the Resident Wellness session, participants indicated that PowerPoint was not the best format for discussing this topic and that they would prefer to spend more time discussing communication skills such as debriefing.

Table 2. Professional Development Session Attendance and Survey Responses

Class	Attendance Percentage (N)	Survey Response (%)	Topic was Pertinent	Faculty was Knowledgeable
Fall Sessions				
PGY-1	0.67 (12)	0.38	4.67	5
PGY-2	0.71 (14)	0.3	4.67	5
PGY-3	0.83 (12)	0.4	4.25	4.75
PGY-4	0.77 (13)	0.8	4.25	4.75
Spring Sessions				
PGY-1	0.54 (12)	0.6	4.67	5
PGY-2	0.43 (14)	0.5	4.67	5
PGY-3	0.50 (12)	0.83	4.2	4.4
PGY-4	0.54 (13)	0.43	4.67	5

Table 3. Resident Survey Results of Perceived Stress Level Post-Session (Percentage of Respondents)

Class	Residents Responded as either 'Less Stressed' or 'No Stress At All'	Residents Responding with 'No Change' in Stress	Residents Responding with 'Very Stressed' or 'Stressed'
Fall Sessions			
PGY-1	0.33	0	0.67
PGY-2	0.33	0.33	0.33
PGY-3	0.5	0.25	0.25
PGY-4	0	0.375	0.625
Spring Sessions			
PGY-1	0.67	0.33	0
PGY-2	1	0	0
PGY-3	0.4	0.6	0
PGY-4	0.33	0.33	0.33

DISCUSSION

Overall, this pilot study of a professional development intervention based on the JDCS theory to address ACGME CPR professional development competency was well received and decreased stress across all PGY classes. Med-Peds PROuD was favorably received by residents who found the selected topics relevant and content applicable to their specific PGY. Faculty were viewed as knowledgeable facilitators, reflecting their leadership roles within the program. Notably, survey response rates increased from fall to spring sessions across PGY levels, except for PGY-4 residents, likely due to reduced engagement and investment in program changes as they prepared for graduation.

Of note, PGY-1 and PGY-4 residents reported heightened stress following the first session, both of which focused on transitions – switching categorical programs for PGY-1s and pursuing job opportunities for PGY-4s. These sessions may have increased awareness of challenges associated with these transitions, intensifying perceived stress related to upcoming changes. Conversely, PGY-1 residents reported reduced

stress after the spring session on imposter syndrome, even as they approached supervisory roles. This session intentionally did not emphasize supervisory responsibilities, given an existing required Supervisor's Curriculum provided to all rising PGY-2 Med-Peds and Internal Medicine residents, which provided skills to prepare them for this new role.

Despite residents consistently agreeing that chosen topics were pertinent and expressing interest in attending future sessions, there was a decrease in spring session attendance compared to fall attendance across all PGY cohorts. Data collected from each cohort following their respective fall sessions indicated that residents found the sessions useful and expressed interest in future attendance. We therefore hypothesize that the decline in attendance across all PGYs was not due to a lack of interest in the curriculum but to external factors beyond the curriculum designers' control.

Looking more specifically at each PGY class, spring session attendance dropped by 13% for PGY-1 residents likely due to the overwhelming demands of their intern year, and anxiety related to their impending supervisor role. This was evident during the spring session discussion where PGY-1 participants expressed feelings of exhaustion and burnout. The most significant decline affected the PGY-2 residents with a 28% decrease in attendance (fall attendance 43%). This decline can be attributed to several factors, most notably conflicting with the last journal club of the year, which residents are required to attend twice a year. Moreover, the Med-Peds PGY-2 schedule is intentionally designed to maximize exposure to essential categorical rotations, such as inpatient wards and intensive care units, resulting in a challenging schedule that augments burnout. As a result, some residents may have been experiencing burnout or prioritized required didactics over the optional Med-Peds PROuD session, even if they had a stronger interest in the latter. The PGY-4 class experienced a 23% decrease in attendance in the spring compared to the fall session. This decline was likely due to impending graduation and prioritizing tasks related to transitioning from residency (onboarding, licensure, or moving arrangements).

Limitations

While the results of this pilot study are promising, several limitations should be considered. A key limitation to our findings is the single-year duration and single-institution setting, which restricts generalizability. Though done within a large-sized Med-Peds program (PGY cohort range 12–14 residents), the sample size is small, which limits the power of any statistical findings. We also did not conduct pre/post-test assessments to measure burnout besides stress after the session. Moreover, additional questions that could have provided a deeper understanding of the reasons behind the changes in stress levels or the decline in attendance were not explored.

Future Considerations

To enhance the impact of Med-Peds PROuD, future considerations include expanding the range of topics to address transitions in residency and incorporating hybrid sessions by integrating them into the pre-existing protected Med-Peds noon conference curriculum alongside after-hours sessions. In response to observed declines in resident attendance and unanticipated barriers to participation – primarily the overwhelming demands tied to specific PGY-level responsibilities – we advocated for future sessions to be included in program-sponsored mandatory didactics to provide protected time for participation. Additionally, during the second year of the curriculum (2024–2025 academic year), we adjusted the format to include two additional sessions per PGY level to take place during the workday, complementing the two sessions held at a faculty member's home. By doubling the frequency of Med-Peds PROuD sessions to quarterly, these changes aim to better meet residents' needs, enhance engagement, and cover a broader range of professional development topics. The JCDS model predicts that the provision of increased professional development resources and engagement in group and peer mentoring will allow residents to gain skills that will help them decrease the burnout they experience as trainees. More sessions will provide more opportunities for data collection to better assess the efficacy of these resources – including pre/post surveys, and a measure of burnout.

CONCLUSION

This pilot program, consisting of carefully designed professional development workshops based on established ACGME standards and informed by an internal residency survey, presents an innovative approach to fostering well-being and professionalism within a large Med-Peds residency program. Though limited, our data demonstrates that participating residents viewed this targeted professional development program as relevant, worthwhile, and valuable. This approach yielded positive outcomes for all involved, with residents gaining confidence and professional skills, while the residency program identified an innovative and effective way to meet accreditation standards.

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Disclaimer

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Disclosures

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Operationalizing Well-Being Using Work Determinants of Well-Being: Building a Well-Being Analytics Approach

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ABSTRACT

Improving the well-being of healthcare workers (HCWs) requires embedding well-being into healthcare operations. However, limitations of current well-being metrics serve as barriers for healthcare systems to address well-being in the same manner as other operational challenges, such as patient access and safety. Identification and measurement of Work Determinants of Well-Being (WDOW), organizationally attributable characteristics that are related to HCW health and well-being, are necessary first steps for healthcare institutions to take a systems approach to well-being. By leveraging existing data within healthcare systems, we describe how we built a well-being analytics team and database to identify WDOW. We use a case example of Paid Time Off (PTO) utilization to illustrate the potential of this approach to reduce burnout and improve well-being among HCWs.

KEYWORDS: work determinants of well-being, well-being data analytics, paid time off

INTRODUCTION

The well-being movement is at a crossroads. Post-pandemic recovery brings many health systems back to a pre-pandemic state in many ways. While we celebrate this "win," we must not forget that healthcare workers (HCWs) were struggling far before the pandemic and that simply returning to pre-pandemic levels of well-being is not the transformative culture change to aspire to. The National Plan for Health Workforce Well-Being states, "the solution is to take a systems approach that recognizes that no single variable in the health system is to blame for the problem of burnout. Addressing the issue from multiple angles is necessary to redesign environments."[1] Both redesigning the work environment and optimizing the operations by which we deliver healthcare while centering workforce well-being will be needed to achieve transformative culture change.[2]

What has prevented us from embedding well-being into operations? If no single variable is to blame for the problem of burnout, how do we identify these various variables? Are these variables the same for all healthcare workers, or as is likely, are the variables unique to various job families such as physicians, nurses, pharmacists, and medical assistants? How do we support our healthcare system leaders at all levels in approaching well-being with the same rigor as they would for routine operational problems such as access, throughput, or surgery turnaround times? A central maxim in operations is, "If you can't measure it, you can't manage it." For well-being to be embedded in operations, core metrics that can be easily and continuously measured in real time (just as we do for access, for example) are needed.

Currently, there are several challenges to measuring well-being. First, organizations typically focus on well-being metrics (usually engagement and burnout related) gathered from HCWs using surveys. These surveys rely on subjective well-being metrics that are usually lagging indicators, add another task for already overburdened healthcare workers to complete leading to reports of survey fatigue, have considerable non-respondent percentages that lead to uncertainty about the general applicability of the results, and are often administered too infrequently (usually annually). This leads to subjective data that does not provide a complete picture of the entire workforce, requires active collection and burdensome analysis, is retrospective, quickly dated, and too downstream (lagging) to allow for effective intervention. We need data that are objective, complete, passively collected, updated regularly (or better yet, in real time), and upstream enough to allow for intervention.

These data, which we believe are the multiple variables the National Plan is referring to, can be found by identifying and measuring work determinants of well-being (WDOW), or organizationally attributable, employment-related conditions that contribute to group differences in health risk and status.[3] This is the first step for well-being to be addressed the same way we address other operational matters. WDOW control whether work promotes well-being or serves as a hazard to HCW well-being and can serve as powerful system-level prevention and intervention targets. Fortunately, there is a massive amount of relevant workforce data buried within healthcare organization systems that can help identify objective WDOW that impact well-being. Examples include electronic health record log data to understand after-hours work, assessment of vacation time, and staffing ratios.[4,5]

The primary challenge to use these data includes siloed sources across different institutional databases, including human resources, risk, injury, electronic health records, facilities, and financial records. Without a cohesive approach

to data collection and analysis, organizational leaders struggle to identify trends, patterns, and potential areas for systems level intervention to enhance workforce well-being.[6]

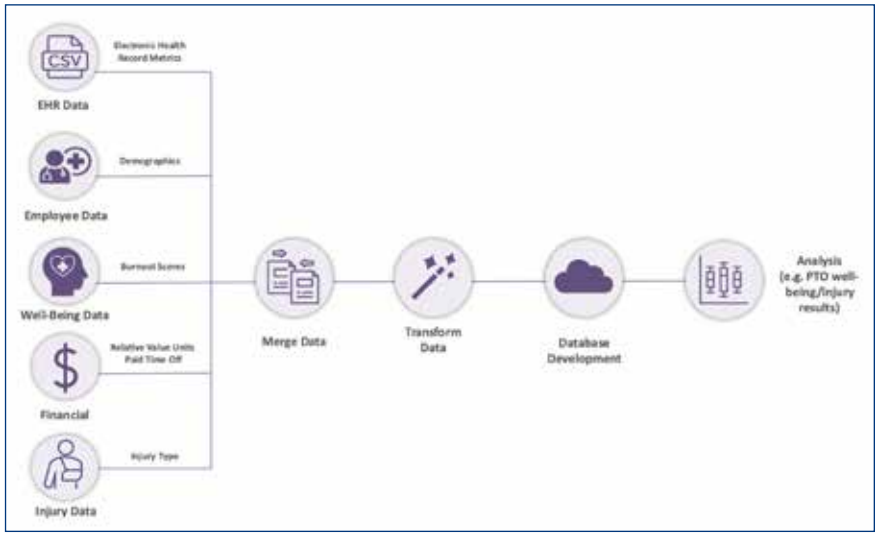
Below, we describe how our organization has taken the first step of fulfilling the promise of providing a superior work environment for our HCWs by bringing together multiple available data sources to allow for identification of WDOW that can serve as potential targets for intervention.[7] To do so, we created a well-being analytics team to build a central well-being database architecture. This approach can be replicated by health systems to create the foundation needed to achieve our ultimate vision of leaders using this data to transform well-being culture.

DEVELOPMENT

The Office of Well-Being began by cultivating partnerships with key members of the organization that owned various data sources. We began collecting various data that previous literature suggested may be particularly relevant to well-being and could help us identify WDOW. Data includes, but is not limited to, deidentified electronic health record metrics, employee demographics, subjective well-being responses, financial costs and productivity, employee injuries and leave of absences, reporting structures, and several other data sources. Our analytics team collects and makes sense of these data by looking for patterns and establishing their veracity. To accomplish this task with large amounts of data and complex hypotheses, we created a central database that merges the data above and stores data in an organized fashion allowing us to use code to retrieve exactly what variables we need to answer the question asked. We gather the data, organize it carefully, and "ingest" it into the database. Lastly, we store the database in the "cloud" which is a large space big enough for us to allow machine-learning and artificial intelligence to assess the data for patterns we cannot identify on our own.[8,9]

Our well-being analytics team is currently made up of three core members with additional access to multiple institutional experts and information systems teams. The three core members include a lead analyst, data architect, and data analyst. The lead analyst is responsible for designing the overall data architecture, ensuring all the necessary data elements (available objective variables) are known and accessible, and defining the outcomes to be measured. The data architect is responsible for building the database in the available environment, on premises or in the cloud, and ensuring the vetted elements are accurately captured, labeled, and maintained. Additionally, the data architect is often called on to creatively manage complex data requests for internal and external analysts working with our larger well-being team. The data analyst has the role of curating and transforming the data for specific projects, questions, or hypotheses. Data pulled from a large database can often have missing elements, multiple results for the same elements within the time period being analyzed, or other nuances that make the data difficult to consume and test. (**Figure 1**).

Figure 1.



WDOW PAID TIME OFF (PTO) CASE EXAMPLE

Our flagship program for the Office of Well-Being is called the Scholars of Wellness (SOW). Additional details about this program can be found here (https://edhub.ama-assn.org/steps-forward/module/2782425). One objective of this program is to allow us to explore hypotheses that can help us identify WDOW. Three separate SOW leaders identified rest and recovery opportunities as important employment-related conditions that contribute to group differences in health risk and status (i.e., WDOW).[3,10] For example, one project showed that 32% of physicians took ≤2 weeks of paid time off (PTO) per year, and those who had taken their PTO >6 months ago had a 32% increase in burnout compared to those who had taken PTO more recently. While PTO is often conceptualized as an individual choice, the interventions used in all three Scholars of Wellness projects included system-level changes such as dividing physicians into pods of coverage partners, team-based care workflows to limit the increase in work upon return from PTO and creating schedules with vacation weeks prepopulated one year in advance. These interventions were effective, including 91% physician utilization of the prepopulated weeklong vacations in their calendars across the year. These projects demonstrate that using PTO impacts physician well-being and we can redesign the process of PTO to increase healthy PTO usage at the system level.

Next, we chose to further explore PTO utilization as a WDOW in nursing and pharmacy HCWs because these job families had the highest burnout rates in our system, mirroring national trends.[11] First, we integrated siloed data sources about nurses (n = 2,967) and pharmacists (n = 280) employed by Northwestern Medicine's (NM) into our central well-being database. We excluded new hires who did not yet have the opportunity to accrue PTO, as well as HCWs who did not respond to NM's annual well-being surveys. Second, using the Orange Data Mining application (an open-access data visualization, machine-learning, and data-mining toolkit), we explored the data using a sieve (also known as parquet) diagram.[12] This is a graphical method to visualize frequencies in a two-way contingency table by comparing them to expected frequencies. Specifically, we plotted PTO accrual by those healthcare workers screening positive for burnout for each job family. We defined PTO as 'accrual of PTO hours,' which describes the number of hours accumulated. Higher number of hours accumulated generally means the HCW is not using as much PTO and, therefore, may have fewer opportunities for rest and recovery. We were able to produce two cohorts based upon this data visualization: those below and above the expected frequencies of burnout. The odds of burnout, as measured by scoring a 5 (experiencing burnout once a week or more), in nurses in the high PTO accrual group (>26 hours; 26% of nurses) were 1.4 times (CI 1.09–1.8) greater than those in the lower PTO hours accrual group (<26 hours); the odds of burnout in pharmacists with >65 hours of PTO (30%) were 2.12 times (CI 1.02–4.41) greater than those in the lower accumulated PTO hours group. This data provided evidence for the hypothesis that PTO is a WDOW, as fewer opportunities to rest and recover were contributing to higher rates of burnout. However, because of our central well-being database, we could further run analyses for the PTO WDOW against other previously siloed data sources. We evaluated injuries in the staff nurse population, non-managerial or tenured roles, who used PTO in the prior year but still had accrued PTO available in their PTO bank. By associating our hospital system's injury data with our available HR and well-being data, we were able to identify 882 nurses in our database that met the criteria for analysis. We found that average PTO accrual for nurses who did not sustain an injury in fiscal year (FY) 2023 was 60 hours, while the average for nurses who did sustain an injury in the same period was 66.5 hours, p= 0.026. This outcome added support to the association between accrued PTO and workforce well-being. This data can be used to make an additional compelling argument to our organization that finding systems level solutions to facilitate the healthy utilization of PTO needs to be an organizational priority.

CONCLUSION

Future directions for our team include continuing to identify additional WDOW across various job families in our healthcare system. Post-pandemic, we cannot focus well-being efforts solely on physicians and nurses. These efforts will need to be inclusive and at scale. We believe the approach above is a necessary first step for well-being leaders to shape organizational strategy. We then will move to the next step to realize our vision as we learn how to best ensure that new data can result in behavior and operational changes to improve well-being. More recently, our team has partnered with faculty in the medical school with expertise in intervention and implementation science to help focus our approach on elements with potential for dashboard development and intervention. Finally, we are optimizing our team's processes of large-scale data cleaning and database design so we can run more robust predicative efforts in the future, building on work that has already shown how even using one main data source (the EHR) can begin to predict burnout.[13]

We believe the future is bright for well-being 2.0 as we seek to create the work environments that support workforce thriving and will center well-being as an operational priority. When this happens, we believe the responsibility for well-being will be shared and distributed across the healthcare organization and large-scale transformative culture change can truly be achieved.

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Disclaimer

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Pathways to Wellness: A Pilot Empowerment Program

STEPHANIE CATANESE, MD, FACP

ABSTRACT

Physicians and advanced practice providers often lack structured opportunities to develop personal and professional skills, critical for reducing burnout and enhancing job satisfaction. To address this, Brown Medicine's Division of General Internal Medicine introduced the Personal Development Empowerment Series, a cost-effective faculty development initiative integrated into the existing schedule. The series includes sessions that focus on topics like imposter syndrome, assertiveness, and time management, blending education with interactive activities to promote practical application. Facilitated by psychologists and motivated peers, the lectures have been well received, with faculty appreciating its emphasis on reflection and cognitive-behavioral strategies. This replicable initiative fosters a supportive work culture, boosts morale, and highlights the importance of personal growth. This program demonstrates that affordable, home-grown interventions can significantly impact well-being and organizational culture.

KEYWORDS: personal development, burnout prevention

In medicine, significant emphasis is placed on acquiring medical knowledge and managing risk, yet there is limited support for physicians and advanced practice providers (APPs) to develop personal and professional skills. Building these skills can reduce burnout by enhancing job satisfaction, fostering a stronger professional identity, and reinforcing a sense of competency among physicians and medical educators. Research indicates that physicians who engage in coaching programs focused on personal development experience less emotional exhaustion and a greater sense of purpose. For example, a 2019 study published in JAMA Internal Medicine found that physicians who participated in a sponsored coaching program reported improvements in quality of life and resilience.[1] Similarly, a 2018 study in the Annals of Family Medicine highlighted that team-based care and skill-building programs contributed to increased work control among physicians, resulting in reduced burnout.[2]

While evidence supports the benefits of coaching programs, these are often systems-level interventions requiring significant resources, including skilled instructors, time, and funding. Recognizing the need to foster personal and professional growth in a more cost-effective manner, Brown Medicine's Division of General Internal Medicine developed the Personal Development Empowerment Series. This initiative was integrated into the existing faculty development schedule, occurring for one hour over lunch twice per month, maximizing faculty accessibility. Topics for the series were gathered from faculty via email and meeting discussions, then refined with input from the division's well-being committee (see **Table 1**). We are fortunate to have three psychologists within our division who volunteered to contribute to content creation and delivery, though many of the topics may be best delivered by motivated peers who can speak to best practices. Each session incorporates didactic components to educate faculty on common challenges and promote effective coping strategies, alongside interactive portions that address real-world scenarios.

Table 1. Faculty suggestions for personal development content

Faculty Topic Suggestions	Empowerment Series Sessions
Managing self-doubt	Imposter Syndrome
How to set boundaries	Avoiding People Pleasing
Assertive vs aggressive behavior	Assertiveness Training
How to improve time management	Taking Back Your Evenings
Growth mindset	Maintaining an Adaptive Practice
How to say no	
How to be efficient	

The Personal Development Empowerment Series has been well received, with faculty expressing appreciation for the opportunity to explore these essential topics. Physician well-being is shaped by factors at both individual and systemic levels, and this series emphasizes cognitive and behavioral strategies that can be applied broadly. By providing protected time for self-reflection and growth, we aim to normalize these practices and highlight their importance. We are proud of this highly affordable initiative, which other divisions can easily replicate. Potential barriers include a shortage of knowledgeable speakers in certain areas and scheduling challenges.

Faculty development programs that highlight reflective practice, work-life balance, and career planning have shown significant positive impacts on well-being and job

satisfaction.[3] By addressing providers' holistic needs, division-sponsored development programs foster a supportive work environment, boosting morale and promoting a positive organizational culture. We are committed to continuing this series within our division and supporting the ongoing development and well-being of our faculty.

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Collaborative Wellness Initiatives: Involving Physicians to Address Burnout in Healthcare

JUDSON BREWER, MD, PhD; LIA ANTICO, PhD

ABSTRACT

Physician burnout is a pressing issue in healthcare that demands effective wellness interventions. Enhancing wellness resources is challenging and this article highlights key insights for successful initiatives. It emphasizes the importance of evidence-based and user-centered design, which involves engaging physicians in the development and implementation of wellness programs. For example, mindfulness training programs designed with clinician input were tailored to fit their busy schedules and addressed their specific needs, resulting in significant reductions in cynicism and emotional exhaustion among participants.

Additionally, the article advocates for a dual approach that targets both organizational and individual factors to effectively combat burnout. By fostering a culture of self-care and resilience in both education and the workplace, healthcare systems can improve well-being and engagement among current and future employees. Ultimately, collaborative and sustained efforts to implement validated interventions are essential for achieving lasting improvements in healthcare environments.

KEYWORDS: burnout; empathy fatigue; digital therapeutics; organizational-level intervention; individual-level intervention

INTRODUCTION

In recent years, the conversation around physician burnout has shifted from isolated incidents of personal struggle to a systemic issue that affects the entire healthcare ecosystem.[1–3] The COVID-19 pandemic accelerated this burnout, but the problem has been festering for years.[3] Addressing physician well-being is no longer seen as optional; it is a necessity. The path forward requires a thoughtful, evidence-based approach that addresses both organizational and individual needs, with a special focus on designing interventions that are tailored to healthcare professionals. Recent studies, such as the clinician-driven mindfulness program by our team, offer possible pathways for how we can move beyond surface-level fixes to create lasting, meaningful change.[4]

THE IMPORTANCE OF USER-CENTERED DESIGN IN BURNOUT INTERVENTIONS

For too long, wellness programs in healthcare have failed to gain traction, often because they are designed without the input of the very professionals they aim to serve.[5,6] User-centered design is a cornerstone in industries like technology and product development,[7] but it has been underutilized in healthcare wellness initiatives. Involving healthcare professionals in the design process makes interventions more tailored, effective, and aligned with the specific challenges these professionals face daily.

Take, for example, the mindfulness training program designed by Brewer and Antico, called "From Burnout to Resilience."[4] This program was specifically created with input from clinicians, ensuring that it addressed the real-world stressors that lead to burnout, such as cynicism and emotional exhaustion. The program was delivered in formats that fit into the busy schedules of healthcare professionals in medicine – an audio podcast and a free app-based platform – so that the content could be reviewed during commutes or breaks, instead of adding another item to an already overloaded schedule. In particular, it includes seven 15-minute modules featuring real-stories shared by clinicians and mindfulness exercises designed to identify and break "habit loops" in clinical practice [4] – repeated patterns of automatic behavior. For instance, a clinician might hear a patient express feeling of anxiety, frustration, or hopelessness. The clinician empathizes deeply, feeling the strong urge to immediately act and fix the situation. The involvement of clinicians in the development process ensured the program was both accessible and relevant, addressing issues like empathy fatigue and the emotional toll of patient care. Physicians from various specialties, along with other clinicians, were recruited to help tailor the content and format to their needs and schedules. More details on the development process and participant involvement can be found below.

This user-centered approach fosters a sense of ownership among healthcare professionals.[8] When individuals feel that they have contributed to a solution, they are more likely to engage with it and promote it among their peers. In Antico & Brewer's study, clinicians were engaged as pilot testers, providing feedback at every stage. We identified habits of empathy fatigue contributing to burnout through literature and physician interviews, then created script-based content

for a "minimum viable product" (MVP). We tested the audio course with 40 clinicians in two rounds. In round 1, 10 physicians reviewed each module for clarity and usefulness, then refined the training with real-life vignettes. In round 2, 30 clinicians confirmed content relevance and contributed more vignettes.[4] This iterative process allowed the program to evolve based on real-world input, ensuring it met the diverse needs of clinicians. This approach ensured the intervention was grounded in evidence-based strategies and user insights, making it adaptable to changing needs.

THE NEED FOR BOTH ORGANIZATIONAL AND INDIVIDUAL-BASED INTERVENTIONS

Burnout is a multifaceted issue that requires solutions targeting both the organizational environment and the individual healthcare worker.[9] Organizational-level interventions might include changes like improving staff-to-patient ratios, redesigning inefficient workflows, or fostering a culture of support and collaboration.[9,10] These changes can alleviate systemic stressors that lead to burnout. For instance, a hospital might aim to reduce administrative burdens or increase leadership support, both of which have been shown to contribute significantly to burnout.

However, individual-based interventions are equally important.[9] Programs that focus on building resilience, emotional regulation, and stress management can empower healthcare workers to manage the pressures of their job more effectively.[11] The mindfulness training program from our pilot study is one example of an individual-focused intervention that yielded significant results. Participants reported a 33% reduction in cynicism and a 25% reduction in emotional exhaustion, key dimensions of burnout, after completing the program. Additionally, the program led to reductions in anxiety and worry, both of which are critical in helping healthcare providers maintain their mental health in high-stress environments.[4]

Addressing burnout at both the organizational and individual levels has a synergistic effect.[9] When healthcare professionals feel supported by both their institution and the resources available to them personally, they are more likely to engage in wellness programs. Antico & Brewer's study demonstrated that clinicians who participated in the mindfulness program reported increased self-compassion and nonreactivity, essential skills for managing the emotional labor of healthcare work.[4] These improvements were reinforced by institutional support, signaling that wellness was a priority at all levels.

Implementing wellness interventions from both angles can create a ripple effect. Leadership's prioritization of wellness encourages staff to take mental health seriously. Additionally, promoting self-awareness and self-care early in medical and nursing education is key to preventing burnout and enhancing well-being in future clinicians. By fostering a culture of self-care and resilience, healthcare systems can create a more engaged and less burned-out workforce. In our study, mindfulness training helped providers develop practical tools to navigate both personal and systemic stressors.[4]

THE CRITICAL ROLE OF VALIDATED, EVIDENCE-BASED INTERVENTIONS

In a healthcare system where resources are often limited, it is essential to maximize the impact of wellness initiatives. This is where validated, evidence-based interventions come into play. Programs that have been rigorously tested and proven to reduce burnout offer a more reliable return on investment, both in terms of financial resources and human capital.[9]

Developing an evidence base for potential interventions starts with pilot testing and then replication. For example, our program was tested in two separate nonrandomized pilot studies, both of which showed significant reductions in cynicism, emotional exhaustion, and anxiety among participants. These outcomes were measured using validated tools like the Maslach Burnout Inventory[12] and the Generalized Anxiety Disorder-7 scale,[13] ensuring that the results were not only significant but also replicable. By focusing on mindfulness, self-compassion and tolerance of uncertainty – both well-studied strategies for improving mental health – the program provided clinicians with practical tools that could be easily integrated into their daily routines.[4] One such tool involved noticing and mapping the elements of habitual patterns, paying attention to how these patterns manifest in the body and mind. This practice helps clinicians recognize when they are caught in a habit loop and enable them to break free from it. For example, it encourages cultivating self-compassion and care, while helping individuals step out of the self-judgment loop. However, identifying a "signal" is just the first step. Randomized controlled trials are a critical next step to control for expectancy, time and other non-intervention-related variables.

In addition to testing efficacy, scalability and fidelity are important factors to keep in mind when developing interventions. For example, digital platforms that are commonly used (e.g. podcast formats, apps etc.) are designed to be accessible to a wide range of busy individuals. These formats allow clinicians to engage with content at their own pace, reducing the likelihood that time constraints prevent participation. This flexibility is crucial in healthcare, where schedules are often unpredictable.

Ecological measurements – such as job satisfaction, patient-centered care, and staff engagement – can provide hospitals with a holistic view of how well an intervention is working.[14] Including these in gathering an evidence base for potential interventions will likely help budget-constrained institutions identify value that will pay dividends in terms of decreased staff turnover.

CONCLUSION

A user-centered design process would ensure that wellness programs are tailored to the specific needs of clinicians. By addressing both organizational and individual needs, the hospital or healthcare system could foster a more supportive, resilient workforce. And by implementing validated, evidence-based interventions, the positive impact of these initiatives would be felt for years to come. This is the future of burnout interventions in healthcare – not a quick fix, but a collaborative and sustained effort that acknowledges the complexity of the problem and addresses it from all angles.

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Truly Attending: Cultivating Attention, Presence and Self-Awareness Through Narrative Medicine Workshops

MARIAH STUMP, MD, MPH, FACP; MARION MULL MCCRARY, MD, FACP; FARIHA SHAFI, MD, FACP

ABSTRACT

Narrative Medicine is an international discipline at the intersection of humanities, the arts, clinical practice and healthcare justice. This discipline aims to deepen skills of self-awareness, presence, attention and creative capacities and evokes our capacity to attend to the emotional undercurrents of narrative stories both in spoken and written form. Through group discussion and human connection of sharing stories/writing and creative exchange, we expand justice, equity, attention to self and others, and how we interact with our complex healthcare system. A one-hour narrative medicine workshop has been developed with the goal and intention for other medical educators, faculty, and leaders in the field of well-being to be able to reference this step-by-step curriculum and replicate it in their home programs in order to mitigate burnout and promote well-being, connection and community.

KEYWORDS: Narrative medicine, workshop, physician burnout, well-being, medical education

BACKGROUND: THE WHY

Narrative Medicine is an international discipline at the intersection of humanities, the arts, clinical practice and health care justice. Arising at Columbia University in 2001, primarily through the work of Rita Charon, MD, and her colleagues, narrative medicine has developed principles and practices that equip clinicians to better comprehend their patients' experiences and perspectives so as to deliver equitable and effective health care.[1] This discipline aims to deepen skills of self-awareness, presence, attention, creative capacities and evokes our capacity to attend to the emotional undercurrents of narrative stories, both in spoken and written form. [2] Through using literary analysis skills and reflective writing, clinicians practice honing their attention to the meaning, the essence, and the process of experiences and perspectives. The goal is to improve communication between patients and the healthcare team, cultivate empathy and thereby deliver more effective and equitable care.[3] Through group discussion and the sharing of stories/writing and creative pieces, we expand justice, equity, attention to self and others, and promote healing.

Beyond thinking about the medical exam in order to reach an accurate clinical diagnosis, practices in Narrative Medicine aim to address the relational and psychological dimensions that occur in tandem with physical illness. For example, the diabetic patient who is unable to improve their blood sugar because they are depressed and feeling hopeless at the loss of a loved one.

Illness is a collaborative. It is not just a list of symptoms that culminates in a diagnosis. Illness, particularly living with chronic conditions, is a story that weaves its way into patient's lives and the interaction between patient and clinician.[4] Stories have always been used for healing and we learn through and remember stories. When your grandparent told you a story – chances are you remember it – to the point where you could retell the story nearly word for word.

"Communication and how well providers can listen and support patients can shape the entire arc of healing. Using the lens of narrative medicine we can move towards person-centered care, viewing the person as a whole by better understanding their story. Educating our students so that they can hear and share these perspectives will influence how they practice in the community when they enter the workforce."[4]

Narrative Medicine workshops in medical education have been found to be helpful for both medical student burnout reduction and building resilience.[5,6] In addition, resident workshops in Narrative Medicine have also been found to promote well-being, reduce burnout, and increase empathy.[7-9] Given this, often medical educators and faculty tasked with leading well-being workshops may seek guidance in how to initiate or lead this type of workshop.

This article will guide an educator, faculty, well-being leader/facilitator on how to lead a group through a narrative medicine workshop in less than one hour with the hopes of bringing more narrative medicine into medical schools, residency curricula, faculty workshops, lunch sessions/meetings, hospital administrator activity, allied health professional experiences and possibly in other settings as well.

METHODS: THE HOW

Narrative Medicine workshops can be designed for a 50–60 minute time slot.

Learning objectives of the session:

- Learn how narrative medicine can expand insight, creativity and connection that supports inclusion and a sense of belonging.
- Explore the impact of narrative practice on team building and burnout prevention.
- Experience two different models of narrative medicine that can be used in groups of physicians and clinical learners, in interdisciplinary teams and with patients.

PART 1: BRIEF INTRODUCTION TO THE FIELD OF NARRATIVE MEDICINE

It is recommended to provide the group with background on the history of narrative medicine, how it is a recognized discipline, and show outcome data about why it is meaningful to engage with and study this field. In addition, the benefits of honing these skills should be clearly defined for providers, patients and the healthcare system. Recommended time: 10 minutes

PART 2: CLOSE READING

A piece of literature is offered to the group for analysis and close reading. Generally, a short poem is selected. The poem is first read by the facilitator of the session. The participants are instructed to listen to the poem and try and attune themselves to the emotional undercurrent being expressed in the words. The facilitator then asks for a second reader. The poem is then read a second time by a participant volunteer. After the second reading the facilitator asks the participants to break up in groups. Depending on the number of participants the size of groups can vary but ideally there are no more than eight people per group to allow for a smaller group to promote sharing, equal time for conversation and trust building with the group.

Once in their group, the facilitator asks the participants to share their impressions of the poem in terms of tone, themes, quality of sound expression in the words, emotional themes evoked when hearing it read. They might want to consider the following guiding questions in their group:

Frame: What do we know about the author?

Plot: What happens?

Form: How is the story told/from what perspective? (Narrator, character, place, scene, gestures, point-of-view, dialogue, mentation, conflict, irony, syntax (how are sentences shaped?), diction (word choice and quality of speech).

Time: How does time operate in the story or poem?

Desire: What does the author want us to know?

The group is given about 10 minutes to discuss the poem and share with each other. The facilitator then brings the attention to the full group and asks if anyone wants to share their impressions with the larger group. Alternatively, a spokesperson from the smaller group can share one or more impressions on behalf of their other group members.

PART 3: REFLECTIVE WRITING

Participants are brought out of their groups for an individual exercise in reflective writing. The writing is on a particular prompt that is offered by the facilitator. Generally, the prompt relates to one of the themes that have been expressed and evoked by the poem selected for close reading to have the participant engage more deeply with the theme in the form of a written reflective narrative.

Example prompts

- Write about a time you were surprised by emotion.
- Can you recall the last time you felt joy?
- Describe a situation when time stood still for you? What was that like?

Participants are asked to write for 10 minutes on a piece of paper. While it is understood electronic devices can be used to type, we encourage putting a pen or pencil to paper as it is a different experience and one that we often do not practice enough of given our electronic medical record. The prompt is kept up on a slide or a place where the participant can easily refer back to it. Encourage the participants that there are no wrong answers, that they do not have to share their work and that even if only a few sentences come out, that is OK! Provide reassurance that you do not have to be a "writer" to write and that all stories need readers – as it is up to the recipient to interpret them.

PART 4: INVITATION TO SHARE: RADICAL LISTENING/STORYTELLING

After the 10 minutes, participants are invited to share their work with the larger group. If this feels intimidating, and depending on the dynamics of the group, it is optional to have participants break into their original group to share, but it is often beneficial for the entire group to hear participants writing, so all participants have the chance to benefit from their story. After a participant shares, the facilitator asks if someone in the group would like to respond to the storyteller. The listener will reflect back what they heard to the storyteller, just as they did in the close reading exercise done earlier with the piece of literature. After everyone who wants to respond to this, storyteller has had a chance to share. The storyteller is asked how it feels to share their story. This is repeated with another participant sharing their story with the remaining time.

PART 5: CLOSING

If this activity was moving for participants, encouraging a home practice of journaling is a good place to start for processing clinical experiences. In addition, starting a narrative medicine interest group or monthly writing group where this format is used in order to build a community that encourages reflection, sharing and storytelling.

DISCUSSION

The limitations of this workshop are few. There is a growing need for wellness/well-being curriculum and often well-being leaders/champions struggle to find implementable strategies that hone skills of empathy and community building. This workshop is free, requires no associated costs and is low risk. Participants with underlying depression, anxiety or trauma may be triggered by some of the topics. However, the themes in the literary works are common themes encountered in medicine and in life. Participants are not forced to volunteer to read, or share their work and they may silently participate if that is more comfortable for them. We often encourage participants to "dip their toe in" at first and may go through their first workshop as an observer and may feel comfortable participating once they build trust with the community. Even just as an observer, this is a very valuable learning experience.

CONCLUSIONS

Narrative Medicine is a discipline that can be utilized for improving provider well-being and as a strategy for mitigating burnout. Narrative Medicine curricula can be structured in hour- long workshops which are implementable into noon conference or morning report time frames, lunch sessions and evening workshops. They can be virtual or in person. Given the flexibility of providing this workshop in a feasible amount of time, this curriculum can be offered several times through the year as a way to weave narrative medicine into medical school, residency, faculty development or for employee-wellness initiatives focused on team building. It is our intention for this program to be something that can be implemented at other academic or hospital centers and in any healthcare learning environment.

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Disclaimer

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Disclosures

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What Well-Being in Medicine Means to Me: A Letter From a Future Physician

DEEYA PRAKASH; LAUREN ALLISTER, MD

My childhood best friend Caitlin died by suicide when we were 14 years old. I say it like this to you because this was how it was presented to me: a gut punch. One moment we were picking yellow dandelions and daring each other to eat them. The next moment I was alone, left with a wound that would ache for years to come. My mother sat me down in our sunroom as she told me, unsure where to place her hands or how to say the words. She eventually settled on hands around my shoulders, words soft and quick to not betray her own grief.

It was difficult to move forward, and in a sense, I have yet to do so. Coming to terms with a loss from suicide was new for me; learning what the term even was, and how it came to be was another endeavor entirely. I found myself blundering aimlessly for months afterwards.

Luckily, I was coming of age in a new era. I entered high school, and the internet was burgeoning with mental health awareness and suicide prevention campaigns. I was quick to join this movement, numbed by new words like depression and self-harm, forcing myself to learn, process, understand. It was not hard to find places to go and causes to join. As times were progressing, the new generation was starting to crack away at the pre-existing stigma around mental health. What had previously been taboo was now openly discussed, what had previously been silent was now a designated awareness month. As the culture was changing, the youth shouted from the rooftops, and I found my place among them.

Then in 2020, my sophomore year of high school, the world shut down. I found myself confined to my 8-by-10 room in the suburbs of Cincinnati, Ohio. My family and I watched the death tolls rise, terrified for the future and paralyzed by the uncertainty.

As an aspiring physician, every bone in my body ached to help the cause. For those of us who were interested in a medical career, immersing ourselves in hospital culture (either via observing, volunteering, or research) was usually the first step. In 2020, the only people allowed in hospitals were practicing physicians, decked head to toe in PPE, braving the storm. Hospitals were superspreaders, warzones. No teenager with doe eyes and a dream was getting anywhere near one.

As healthcare teams focused on addressing the direst emergency, there was another pandemic wreaking havoc: the suicide crisis. Social isolation, mass unemployment, and an overall sense of hopelessness were only a few of COVID-19's ripple effects, plummeting the mental health of the world and contributing to an alarming escalation in suicide rates. I realized then that my work in suicide prevention had not only become increasingly important – it was now my way of contributing to the cause.

I formed an online community, and together we encouraged people to donate, raised awareness for the growing suicide rate, and provided helpful resources and information. Most importantly, we practiced our own self-care, realizing firsthand what it meant to protect our own mental health. We also realized another shared goal: many of us were also aspiring physicians.

While the pandemic continued well into our high school years, my cohort was not deterred but rather emboldened by this new cause. The internet was at our fingertips and the surge of online activism, the social media movement for suicide prevention, and mental health awareness became the alternative to the pre-pandemic era of hospital volunteerism and in-person opportunities. We found ourselves fulfilled, helping in our own unique way.

As the pandemic waned and the hospitals opened, our focus on mental health never diminished. The COVID pre-medical generation had been acculturated to hold mental health advocacy in high regard, emphasizing wellness in our own lives and to the people around us. With adolescents already at such a high risk for suicide, the subsiding of the pandemic did nothing to quell the rising rates, and we continued to fight to bring awareness and action to mental health and well-being. We were motivated by personal narratives and touched by our pandemic unity.

Now most of the pandemic pre-medical students have finally stepped into hospitals. We are learning the excitement and privilege that comes with tending to the needs of a patient and prioritizing their care. Our COVID experience, and our work in the well-being and mental health spaces, has also given us a unique perspective: we believe that prioritizing patient well-being does not have to mean sacrificing our own. We understand the priority that personal well-being needs to have in our workplace and have the tools and experience to advocate for it. For these reasons, we as the new generation of physicians not only place emphasis on mental well-being but find it central to our vision of the future of medicine.

Looking back, we recall our campaigns and fundraising, our long-standing self-care practices, and especially our friends and loved ones. The breaking down of the stigma around mental health care, the relentless activism, and the prioritization of well-being resources are steps in the right direction for the culture of medicine. I think often of what a difference these cultural values might have made for Caitlin.

Mental health and suicide prevention may have been our foot in the door of medicine, but it is now what we have come to expect when we walk through that door as the next generation of physicians.

Suicide Prevention Resources

If you or a loved one is experiencing thoughts of suicide, caring and confidential support is available 24/7 through the **988 Suicide & Crisis Lifeline**.

In Rhode Island, you can find comprehensive suicide prevention resources at preventsuicideri.org.

Physicians seeking confidential behavioral health support can access the **Rhode Island Physician Health Program** through rimedicalsociety.org.

Healthcare workers can join the advocacy efforts of the **Dr. Lorna Breen Heroes' Foundation** at drlornabreen.org. The foundation reduces burnout and improves well-being by advising healthcare organizations on evidence-based initiatives, reducing mental health stigma, and funding research and programs that support healthcare professionals.

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Trunnion Fracture

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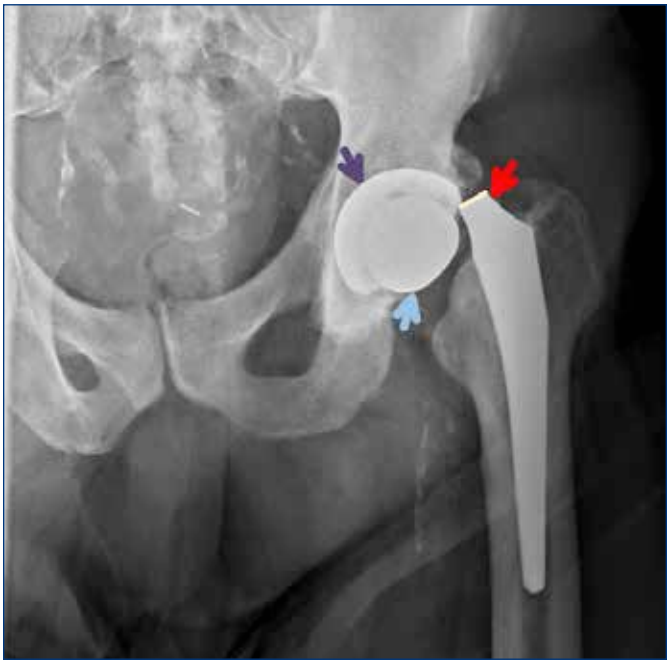
CASE PRESENTATION

A 66-year-old man with a history of left total hip arthroplasty (THA) (**Figure 1**) using a Stryker Accolade I TMZF femoral stem 10 years prior presented with left hip pain after suffering a fall at work. He had landed directly on his left hip and immediately experienced severe pain, exacerbated by movement, and the inability to bear weight. On physical examination, the left lower extremity was externally rotated and shortened. Imaging revealed a fracture through the junction of the trunnion and femoral stem with superior displacement of the remnant femoral prosthesis relative to the femoral head and acetabular component (**Figure 2**).

Figure 1. Labeled illustration of key THA components, including acetabular cup, polyethylene liner, femoral head, femoral stem, and trunnion. This visual highlights the interface points and implant parts essential to hip joint function and stability in THA (Accolade® TMZF® Femoral Stem shown).

Figure 2. Anteroposterior radiograph showing a hardware fracture through the trunnion of the femoral prosthesis, with the femoral stem component dislocated superiorly (red arrow). The proximal portion of the trunnion remains attached to and positioned within the femoral head (blue arrow) which remained concentric with the acetabular shell (purple arrow).



Notably, the patient had visited the emergency department (ED) several months prior with complaints of left hip pain. At that time, imaging demonstrated eccentric positioning of the trunnion in the femoral head (**Figure 3**). This rare radiographic finding is essential to recognize as impending trunion failure. Following revision surgery, the patient had complete resolution of pain and fully regained hip function and mobility (**Figure 4**).

Trunnionosis is a uncommon complication of total hip arthroplasty (THA), considered to account for up to 3% of revision THAs.[1] It occurs due to wear and corrosion at the femoral head-neck junction. Corrosion leading to release of metal ions can cause serious local adverse soft tissue reactions, and in severe cases, catastrophic fracture or dislocation of the artificial femoral head from the femoral stem, as seen in the present case. This case is atypical because

Figure 3. Anteroposterior radiograph, seven months prior to the fall, showing eccentric positioning of the trunnion in the femoral head, suggesting significant wear without complete fracture of the trunnion (yellow arrow). This rare radiographic finding is essential to recognize as impending trunnion failure.

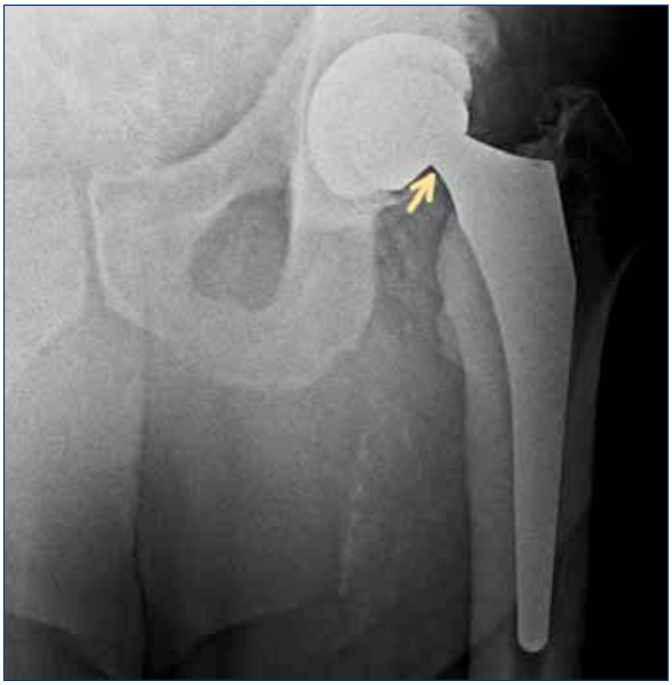
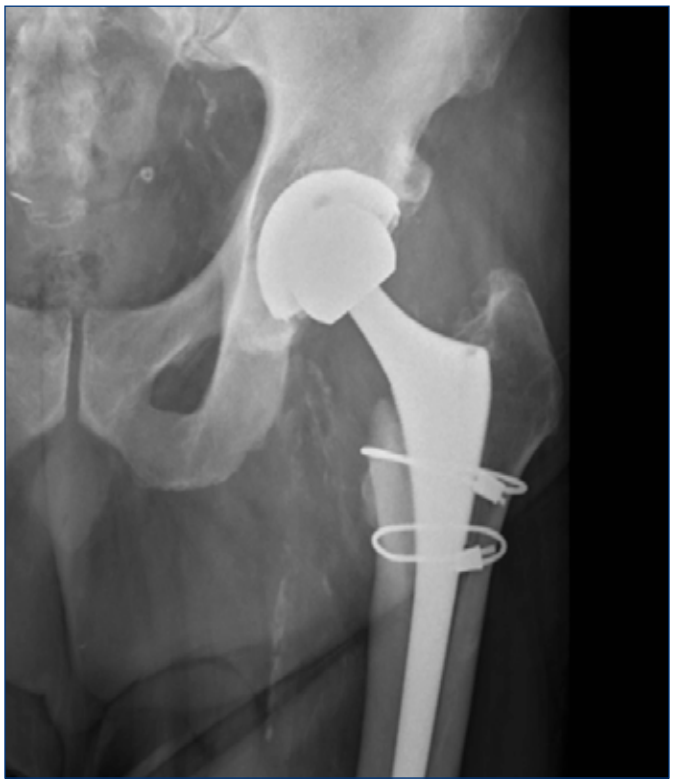


Figure 4. Anteroposterior radiograph of the left hip one month after revision surgery.



the trunnion was fractured completely, with the remnant trunnion remaining attached to the femoral head, located in the acetabular shell. In contrast, hip dislocation is a more common complication of THA but can have similar clinical presentation. However, first time prosthetic dislocations, unlike trunnion fracture, can be treated conservatively with closed reduction whereas trunnion failures necessitate revision surgery.

Trunnionosis can be easily missed if not suspected, and has a risk of progressing to catastrophic trunnion failure if not detected promptly. All providers caring for patients status-post THA should be aware that in patients whose hips were previously well functioning, new joint pain or stiffness in the buttock, thigh, or groin requires further investigation.[2] The initial workup for such patients should include plain pelvis and hip radiographs, CBC, CRP, ESR, and serum cobalt (CO) and chromium (CM) levels.

Several case reports have found the Accolade I TMZF femoral stem by Stryker to be associated with increased risk of trunnion fracture.[3-5] Providers should have heightened suspicion for patients whose replacement was 10–15 years prior when most Accolade TMZF femoral stems were implanted. Cases of trunnion fracture in THA components from other manufacturers have also been noted in the literature but less commonly.[6,7]

Male patients, those with higher BMI, and higher demand patients have increased risk for trunnion failure.[8] Furthermore, high off-set implants, larger diameter femoral heads, cobalt-chromium femoral heads, and stems made of flexible titanium may all contribute to trunnionosis by increasing the stress at the trunnion head juncture.[9,10]

In summary, trunnionosis and catastrophic trunnion fractures are very unusual. The diagnosis of trunnion failure can be confirmed by plain radiographs showing complete dissociation of the femoral head from the neck at the taper or eccentric positioning of the femoral head on the trunnion. In the setting of gross trunnion failure, prompt revision surgery is indicated.

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Implementation of the Interagency Integrated Triage Tool (IITT) in a Rural Emergency Department: A Qualitative Study in Western Nepal

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ABSTRACT

BACKGROUND: Triage, the process of organizing and prioritizing patient interventions, is a fundamental aspect of emergency departments. This study focuses on the implementation of the recently developed triage tool for resource-limited settings – the Interagency Integrated Triage Tool (IITT) at the Bayalpata Hospital (BH) Emergency Department located in rural Nepal.

METHODS: The study involved training healthcare workers and implementing the IITT. Pre- and post-implementation surveys of these healthcare workers were completed. Patient surveys gauged satisfaction and wait times.

RESULTS: Pre-implementation surveys revealed limited prior training, subjective triage methods, and identified barriers to appropriate triage. Post-implementation surveys showed improved staff comfort and understanding of triage and demonstrated a shift in reported barriers.

CONCLUSIONS: The study highlights the challenges faced by a low-resource rural emergency department. The IITT implementation addressed staff concerns, particularly regarding training, but ongoing education and addressing spatial limitations were persisting barriers.

KEYWORDS: Triage, Training, Education, Resource-limited, Rural

INTRODUCTION

Emergency care plays a vital role in the health system, acutely saving lives and serving as a major entry point for healthcare services.[1,2,3] An essential task of any emergency department is its ability to organize and determine urgency of intervention among its patients, known as triage. This process has been tailored to different settings and demographics since the first recordings in the 18th century.[4] Appropriate triage has been known to save lives during normal emergency care operations, as well as during disasters like mass casualty incidents.[3,5] Appropriate triage can help to ensure that proper care is delivered without delay and has been proven to make vast differences in patient outcomes.[6] Unfortunately, this practice is often not well defined and implemented in more rural areas, where limited staff and large patient volumes can become overwhelming.[7,8]

Though various triage systems have existed over the years, in 2019, the Interagency Integrated Triage Tool (IITT) was developed by the World Health Organization (WHO), International Committee of the Red Cross (ICRC), and Médecins Sans Frontières (MSF) to be applied in more rural and resource-limited settings.[9,10,11] The IITT is a straightforward and easy to follow tool that was designed for ease of use by healthcare workers with any level of training. It allows a uniform language across agencies to be utilized in the setting of disaster response, which can occur in this region. This tool aims to standardize triage using the common practice of color-coded categories while considering any high-risk vital signs.[12] This acuity-based triage serves as a guide to prioritizing patients based on the three-color system: red for high-acuity patients that should be seen immediately, yellow for moderate-acuity patients needing to be seen soon, and green for low-acuity patients that can wait.[13] The tool is also divided by age, with a separate list of criteria for those <12 years of age (pediatric).[13] The validation of this tool was performed by Mitchel et al and can be found in their publications.[12,14] However, few studies have evaluated the methods of training and implementation of this tool in rural settings.

Nepal is a small land-locked country in South Asia, with nearly 80% of its people living in rural areas.[15] Standardized emergency care is in its infant stage in the country, and currently focused in its urban centers in Kathmandu.[16] Bayalpata Hospital (BH) is a rural hospital that provides free integrated healthcare to nearly 100,000 people every year, and lies in the remote district of Achham in far-western Nepal.[17] BH Emergency Department (BHED) is staffed with mid-level providers (health assistants who are practitioners with three years of training by the Nepali government), medical officers (medical graduates without specialty training), nurses and an on-call orthopedic surgeon. This hospital provides emergency care to all ages, 24 hours a day, with 12 beds. The BHED cares for approximately 8,000 patients every year, with a high burden of traumatic injuries. Though BHED has been present since 2013, no triage model/system has been created there. Staff reported a loosely understood and non-standardized color-coding system for triage purposes. Building on this familiarity with color-coded triaging and in order to provide a straightforward and intuitive standardized triaging

tool, the IITT was selected for implementation at the BHED. Additionally, this tool also serves as a solid foundation for initial triage training, with scalability for expanded use as needed. Given the risk of earthquakes and other disasters in the region, staff had expressed a specific need for training in mass casualty and disaster response. Considering IITT was developed with this in mind, it aligned well with this need.

This study describes the implementation process of the IITT at BHED, and presents findings from a qualitative analysis of the implementation process. This work serves as part of a larger effort to improve emergency and trauma care delivery at Bayalpata Hospital and in the Achham district of rural Nepal.

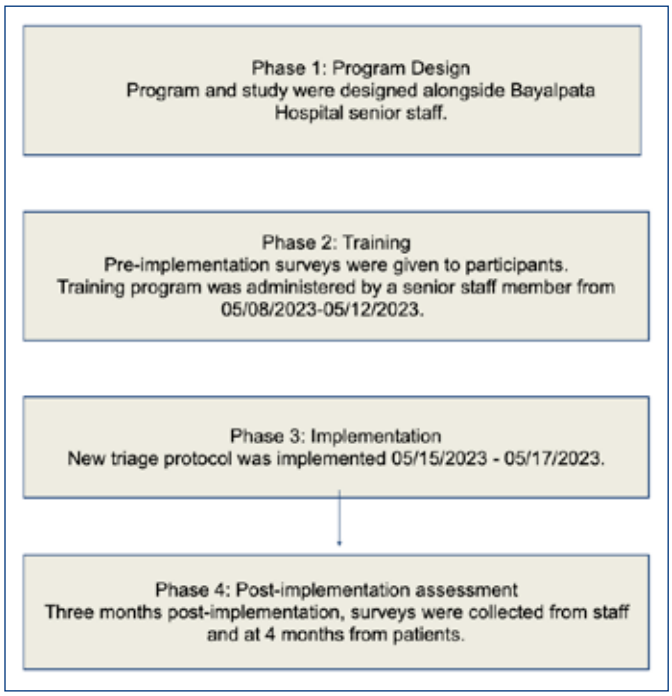
METHODS

Setting, Design and Participants Selection

The implementation of the IITT at BHED was done on May 8th, 2023. The follow-up assessments concluded by October 2nd, 2023. Participants for triage tool training were selected with convenience sampling in conjunction with BH leadership, and included healthcare providers who normally staff the BHED (described above). In total, six medical officers, 14 health assistants (HA), 11 certified medical assistants (CMA), and one orthopedic surgeon rotate through the emergency department. Twenty-five participants were identified and encouraged to participate in the training program. Of that, approximately 20 participants who were available and actively working in the hospital underwent five, live, separate, one-hour training sessions specific to the triage tool. The tool was instituted the following week, and the implementation was directly supervised by the primary course instructor (AN) and other hospital leadership for the entire period of one week. Three months after the implementation and integration was completed, participants who underwent the training were approached by BH research personnel to participate in a qualitative assessment to evaluate the process of implementation. Any BHED staff not participating in the initial training sessions were excluded for the qualitative analysis. Verbal consent was obtained from the participants. Three months after the implementation, patients that received medical care in the emergency department were approached by BH research personnel at random times of the day to conduct a survey to gather their experience. No patient identifier information was collected and only anonymous feedback was sought. (**Figure 1**)

The IITT was implemented as a part of larger effort at Bayalpata Hospital to improve trauma and emergency care in collaboration with Brown Emergency Medicine of Brown University (BEM). This tool was implemented and tailored to this setting in conjunction with hospital leadership and staff. This process resulted in adding an additional vital sign of blood pressure to the high-risk vital signs, provided an additional pathway to allow certain "green"-labeled patients to be deferred to the outpatient department (OPD) next door if appropriate, and other workflow modifications discussed below.

Figure 1. Implementation Schematic

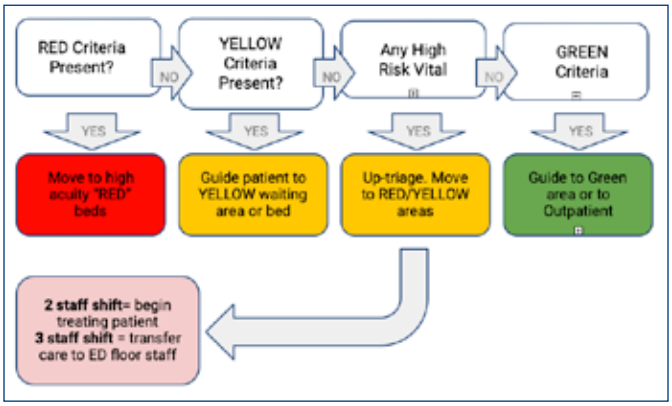


Assessment

Prior to the training program for IITT, emergency department staff members completed pre-training surveys assessing their comfort and understanding of the triage process. Surveys included both open-ended questions and Likert scales. The pre-implementation surveys sought to address the following: (1) comfort of triaging process, (2) existence and understanding of the current triaging protocols, (3) the need for more training, (4) current barriers that exist when triaging patients.

Participants were then asked to attend five, one-hour training sessions. These sessions took place during the staff's pre-existing morning lecture hour and were conducted by a senior physician of the hospital, who is part of this study team. Sessions were developed by the study team using various resources, literature review, and online teaching materials. A PowerPoint presentation form of MSF's Tembo – a free, online-learning platform – IITT course was adapted to the group learning setting. Participants were given lectures and also asked to work in small groups to solidify their knowledge. If unable to attend in-person sessions, they were given the option to complete the training course online. On the final day of the training session, the new triage strategy and protocols were explained and scenario examples were conducted. The following week, the new protocols were implemented.

Figure 2. Integrated Interagency Triage Tool Flow for Bayalpata Hospital



In the week of implementation, posters and laminated cards of the triage criteria and model were created to ensure easy reference to criteria. (**Figure 2**) A new triage desk was installed at the front of the department with the necessary tools: blood pressure cuff, pulse oximeter, etc. This new workflow also assigned responsibilities for triage based on the number of available staff in the emergency department. A designated triage staff member would direct patients to areas of the emergency department based on the color of triage criteria they were given. Their paperwork was also placed on a corresponding green/yellow/red clipboard. During the week of implementation and integration, hospital leadership and/or members of this study team were available to guide the trained health workers.

At three months post-implementation and training, an online survey was used to reassess the emergency department staff. Post-implementation trainee surveys sought to address: (1) comfort and understanding of triage after training, (2) evaluation of training methods, (3) evaluation of new triage protocols, (4) areas for improvement and barriers to triage.

At four months post-implementation, anonymous patient surveys were also collected by BH research personnel to gauge patient satisfaction with wait times and their experience in the triage.

Timeline, Data and Ethics

No patient-identifying information was collected in this study. All staff participant identifying information was de-identified during the analysis period. All data was stored in a password- protected computer on a secure Excel file, with only direct access to the study team. All paper forms were inputted by BH research personnel into the secure Excel, and paper forms were secured safely at BH. This study was deemed exempt from IRB by the local IRB guidelines. The project was supported by BH and no external fundings was obtained.

RESULTS

Pre-implementation: Staff

Surveys from staff prior to training and implementation were collected from a total of 14 emergency department staff – one medical officer (MO), four health assistants (HA), five certified medical assistants (CMA), and four participants who did not disclose their title. Surveys were only given to CMA, HA and medical officers of the emergency department; therefore, those that did not disclose their title are one of the above staff members. These surveys were evaluated utilizing thematic analysis. Responses were reviewed and analyzed for common themes and patterns. Additionally, non-parametric testing was utilized to interpret Likert-scale responses.

Initial surveys collected prior to training revealed that staff agreed on the importance and value of triage in the ED, with nine participants explaining its role in quality patient care and saving lives. One responder stated that triage is important to "identify and prioritize patients according to their condition and provide necessary management faster." The remaining five did not provide a response.

Only three of 14 staff had reported prior training on triaging patients. Nine of the 14 participants reported using their own subjective methods of triaging patients into red/yellow/green categories, stating that red referred to a critical patient and green indicated a stable patient. All staff (14/14) responded that more training in triage as well as a standardized protocol was needed. All staff (14/14) also reported that it was the health assistants or CMA responsibility to perform triage. When asked (open-ended) what were the biggest problems they faced with triage, the most common responses were "lack of training" and "lack of staff" with one responder stating, "we have no proper idea of triage." (**Table 1**) Managing crowds and a lack of beds/waiting area were also reported. Twelve participants reported that additional training in triage would help address the barriers they reported, while three identified that a designated triage area would be beneficial.

Table 1. Staff Reported Barriers – Pre- and Post-Implementation

Barriers Reported	Pre-Implementation	Post-Implementation
Crowd Control	3	2
Limited Staff	5	0
Lack of Training	12	1
Limited Space	3	4

Post-Implementation: Staff

Three months after implementation, eight emergency department staff volunteered to complete surveys – four medical officers, two health assistants, one CMA, one auxiliary health worker (AHW). Of these eight staff members, two were excluded as they did not participate in the initial

training. All six respondents that participated in training reported feeling comfortable utilizing the IITT. Four participants (66%) also agreed that the new triage system improved patient flow, while two participants answered 'neutral'(33%). Five participants (83%) felt the new system improved patient and staff safety and one felt it did not. This same one participant did, however, agree that the new system improved flow and worked well to prioritize urgent patients. Two participants agreed that the length of the provided training was sufficient, while three answered 'neutral' and one disagreed. All six participants answered 'yes' when asked if more training would be beneficial to appropriately triage patients. When asked to identify barriers to appropriate triage, the majority stated a lack of space and difficulty controlling crowds. (**Table 1**)

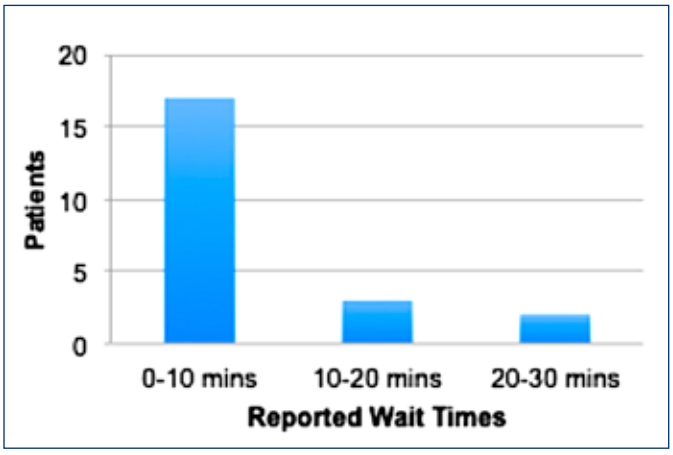
To help improve the triage process, participants made multiple suggestions including triage training for paramedics, "mock and live training in the ED", and space for dividing the ED into different color zones.

Post-implementation: Patients

A total of 22 patients and/or their guardians were surveyed approximately four months after implementation, with a demographic breakdown of 40% female, 60% male, aged 4–72.

Patient surveys showed a wait time before first evaluation (triage) of 0–10 minutes for 17 patients (77%), 10–20 minutes for three patients (14%), and 20-30 minutes for two patients (9%). One hundred percent of participants felt they were evaluated in a timely manner and felt this was appropriate for the severity of their condition. (**Figure 3**)

Figure 3. Patient-reported Wait Times After Triage Implementation at BHED



DISCUSSION

BHED is a low-resource and rural emergency department that faces many unique challenges.

A majority of emergency departments in this remote region of Nepal lack a standardized triage system, and like BHED, do not have ventilatory support or intensive care units.[7] The nearest hospital with this capability is nearly an eight-hour car ride through mountainous terrain. Thus, the establishment of an appropriate and organized triage system at BHED is fundamental.

Through our program we found that, overall, staff had limited prior training in triage and were relying on their own interpretations of a subjective color-coded triaging process. Our initial survey of staff identified barriers that existed in proper triage in this setting. The most commonly reported issue being a lack of training in triage as well as lack of staff, with 85% of respondents citing a lack of training as their biggest obstacle. Our program to provide this training directly addressed this deficiency. Lack of staff, however, is a common problem in rural settings due to a majority of the skilled workforce concentrated in more urban centers.[18,19] To help address the lack of available staff, we created a system of shared responsibilities for triage when staff is limited.

In the post-implementation assessment, it was clear that the IITT training and implementation program addressed staff concerns regarding lack of training in appropriate triage. This program reduced this concern to 12.5% of participants. As for the reported barrier of a lack of staff, while there were no changes in staff numbers during this program, participants no longer reported this as a barrier at the time of post-implementation survey. We attribute this to the system that was developed, taking into account the number of available staff when assigning triage duties. However, the small sample size and make-up of the participants in the post-implementation evaluation also plays a role, which is discussed further in the limitations.

Our methods of using dedicated time for training in a group-learning setting utilizing free online resources (Tembo platform) proved to be a good introduction into the triaging process and tool of IITT. A few participants felt the training would have been more useful if it included more hands-on training and supervision outside of the classroom. Considering staff had limited prior training and experience in appropriate triage, we can appreciate the need for a more multi-modal form of training with closer supervision and feedback from senior staff. Establishing avenues for questions, feedback, and continuing education is a consideration for the future.

Limitations

It is important to note that in the post-implementation evaluation, a higher proportion of participants were medical officers compared to the pre-implementation surveys. The post-implementation surveys were less representative of

the staff members that more often conduct and participate in the triage system (CMA, HA). There may be potential bias in that participants who were more satisfied with the IITT may have been more likely to respond. Additionally, the small sample size may limit the generalizability of the findings. The study's reliance on self-reported data may also introduce bias, as participants may have overestimated or underestimated their knowledge and skills.

Patient surveys prior to implementation would have provided a more complete analysis but were unable to be performed with limited available staff for data collection. In addition, the reported barrier of a lack of space for patient-waiting areas and beds were unable to be addressed. Thus, the plan for physically separating waiting areas by patients of red/yellow/green was ultimately not practical.

CONCLUSION

Introducing the IITT as a triage system for the BHED patient demographic and setting yielded overall positive outcomes in a rural emergency department in western Nepal. The employed methods not only enhanced staff confidence but also positively influenced the perceived level of patient safety. Nevertheless, instilling confidence in novel systems necessitates an investment of time, diverse educational approaches, and ongoing learning initiatives. Future studies can focus on assessing the effectiveness on patient outcomes and for the detection of time-critical illness of such triage models in this setting. BHED has the potential to serve as a model for similar rural emergency departments in the region and elsewhere.

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Findings from Rhode Island's Service Assessment and Referral Process for Birth Defects, 2020–2024

KRISTEN ST. JOHN, MPH; DONNA LEE HOULE, CCHW

INTRODUCTION

Birth defects, which are structural changes that develop in a baby before birth, affect about 3% of births in the United States[1] and about 4% of newborns (about 445) in Rhode Island (RI) each year.[2] While birth defects vary in how they affect a child, some are more severe and can have long-term effects on the health of the child.[1] Early identification of birth defects is important in providing needed care and support services that may improve the child's outcomes.[1]

The RI Birth Defects Program (RIBDP) at the RI Department of Health (RIDOH) is tasked with conducting birth defects surveillance and assuring children with birth defects receive timely and appropriate services up to age five (216-RICR-10-10-3). Birthing hospitals and physicians report children with any birth defect to the RIBDP. All reported birth defects are confirmed or ruled out through review of medical records prior to inclusion in the birth defects registry. To assure children receive timely and appropriate services, the RIBDP has implemented a process where its Certified Community Health Worker (CCHW) conducts service assessments with families of children up to age five. The RI birth defects registry consists of children under the age of five with any reported birth defect; however, only families of children with specific conditions are referred for a service assessment. About 15% of all birth defects cases reported in RI each year are eligible for a service assessment. The conditions were determined by the RIBDP and its Birth Defects Advisory Council and were based on the severity and long-term impacts of conditions. Recommended services were based on condition-specific national guidelines for conditions, but overall, assessments ask families about medical, educational, developmental, and family support service referral, receipt, and helpfulness. Families can also request additional resources and service referrals from the CCHW.

Previous service assessment analyses conducted by the RIBDP examined service referral and receipt for specific conditions. This analysis describes the characteristics of families completing a service assessment for any eligible condition from 2020 to 2024 and examines educational, developmental, and family support service referral, receipt, and helpfulness.

METHODS

Although the registry includes children with any identified birth defect, only children with the following conditions were identified by the RIBDP's epidemiologist from the birth defects registry (which contains only confirmed birth defects cases) and provided to the CCHW to attempt to reach the family for a service assessment: abdominal wall conditions (gastroschisis and omphalocele), congenital hearing loss, craniofacial conditions (craniosynostosis, cleft lip with or without cleft palate, cleft palate), critical congenital heart defects (CCHD), Down syndrome, microcephaly or other central nervous system conditions (CNS), and spina bifida. The RIBDP's CCHW then attempts to reach the family via mail or at a future appointment at a specialty clinic (if it is a clinic where the CCHW can conduct assessments). This analysis included assessments from 2020 to 2024 conducted in-person at specialty clinics, via mail, or via a secure online form (starting in 2021). Mail and online assessments were available in English and Spanish. Assessment information was self-reported by families and entered in Microsoft Access. Since assessments can be conducted annually until the age of five, initial assessments conducted during this timeframe were used for demographic information.

In addition to assessment type (initial or repeat) and location, demographic information collected included gender, primary parental language, and race/ethnicity (as defined in KIDSNET). Average time to first assessment (using birth and initial assessment dates) was calculated for all children except those with craniosynostosis, as it is not commonly identified at birth.[3]

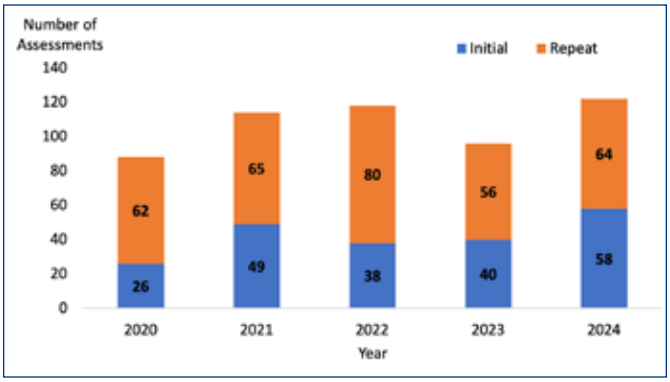
Developmental and educational services examined were Early Intervention (birth to age three) and Special Education (children aged three and older at time of latest assessment). Family support services examined included: Medicaid/Katie Beckett (a Medicaid eligibility category allowing individuals under the age of 19 who have medical needs and long-term disabilities to live at home); Visiting Nurses Association (VNA)/Home visiting (First Connections family visiting program which connects parents of children up to the age of three with support services and resources); RIPIN programs (agency which connects families to other families and provides resource information), and parent support groups (non-RIPIN support groups; includes condition-specific support

groups). Information on service referrals made by the CCHW at the time of the assessment was also collected. Service referral, receipt, and helpfulness was reported by families. Helpfulness was subjective as it was left to the interpretation of the families, who noted if they found the service helpful. Percents for service receipt and helpfulness were calculated for those who were referred to and received the service. Although also collected in the assessment, medical services were not examined in this analysis. Analyses were conducted in SAS Version 9.4.

RESULTS

From 2020 to 2024, there were 538 total assessments completed by families (211 initial and 327 repeat assessments). There has been an increase in both total and new assessments since 2020 and the fewest assessments were conducted in 2020 (**Figure 1**).

Figure 1. Number of Initial and Repeat Service Assessments for Service Assessment Conditions, Rhode Island, 2020–2024



Most initial and repeat assessments were conducted at a clinic (63.5% and 69.4% respectively; **Table 1**). Initial assessments were most frequently completed for craniofacial conditions (61.1%) and least frequently for abdominal wall conditions (2.4%). Children were most often male (64.0%), non-Hispanic White (49.3%), and English was their parent's primary language (83.4%). The average time from birth to initial assessment completion was most frequently more than one year from birth (39.4%), followed by less than six months (37.3%).

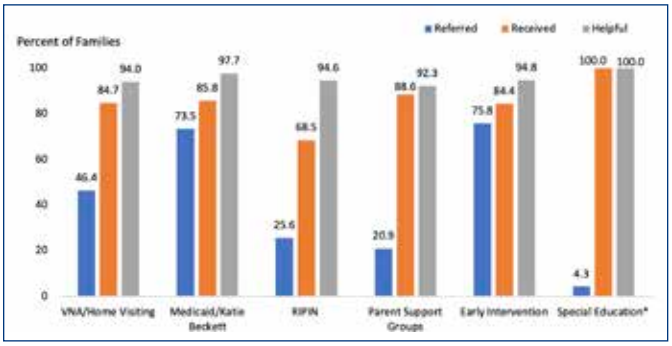
When examining educational, developmental, and parent support services, families were most likely to be referred to Early Intervention (75.8%) and Medicaid/Katie Beckett (73.5%) (**Figure 2**). Apart from RIPIN services (68.5%), of those who received a service referral, more than 80% reported receiving the service. All families who received these services found them helpful, ranging from 92.3% of families receiving parent support group services to 100% of families receiving Special Education. Of the 148 additional services families were referred to by the CCHW, Early Intervention services (46.6%) were the most frequent referral, followed by RIPIN (31.8%) and Medicaid/Katie Beckett (11.5%) (data not shown).

Table 1. Demographic and Assessment Information for Service Assessment Conditions, Rhode Island, 2020–2024.

	Count (%)
Total Initial Assessments	**211**
Initial Assessment Location	
Clinic	134 (63.5%)
Mail	59 (28.0%)
Online	18 (8.5%)
Assessment Conditions	
Abdominal wall conditions	5 (2.4%)
Congenital hearing loss	10 (4.7%)
Craniofacial conditions	129 (61.1%)
Critical congenital heart defects	13 (6.2%)
Down syndrome	33 (15.6%)
Microcephaly/Other central nervous system conditions	14 (6.6%)
Spina bifida	7 (3.3%)
Child's Gender	
Male	135 (64.0%)
Female	76 (36.0%)
Child's Race/Ethnicity	
Hispanic	66 (31.3%)
Non-Hispanic Black	15 (7.1%)
Non-Hispanic White	104 (49.3%)
Non-Hispanic Other	17 (8.1%)
Unknown	9 (4.3%)
Average time from birth to initial assessment*	
Less than 6 months	53 (37.3%)
6 months to 1 year	33 (23.2%)
More than 1 year	56 (39.4%)
Parent's Primary Language	
English	176 (83.4%)
Spanish	30 (14.2%)
Other	5 (2.4%)
Total Repeat Assessments	**327**
Repeat Assessment Location	
Clinic	227 (69.4%)
Mail	72 (22.0%)
Online	28 (8.6%)

*Includes all conditions except for craniosynostosis, which is most often diagnosed after birth.

Figure 2. Educational, Developmental, and Family Support Service Referral and Receipt by Families of Children with Service Assessment Conditions, Rhode Island, 2020–2024.



*Includes only children age three or older at time of most recent service assessment (n=23).

DISCUSSION

From 2020 to 2024, there was a 38.6% increase in total and a 123.1% increase in new service assessments. This was expected due to clinic COVID-19 restrictions and shifts to telehealth in 2020 which impacted the RIBDP's CCHW ability to interview families in clinics. Mail was the only assessment option and families may have not been likely to complete one due to other priorities. Also, the RIBDP implemented a secure online system to complete assessments in 2021 and started sharing aggregate data on completed assessments with families via an infographic provided in the mail. In addition to returning to clinics in 2021, both the online option and infographic may have increased assessment completion by providing a more convenient option and providing awareness of how results are used. Given many families prefer to conduct assessments in clinic, the RIBDP is exploring additional clinics for assessments to reach more families.

The RIBDP began collecting child's race/ethnicity and family's primary language to identify areas for improvement on referrals and assessments. Since RI's birth defects registry is the source for the assessment population, the RIBDP will link the assessment data to the registry to compare assessment completion by child and parental demographics. This will allow the RIDBP to examine any differences between those completing or not completing an assessment. Birth defects rates from 2018–2022 were highest in those children who were non-Hispanic Black and Hispanic, lived in a core city (Central Falls, Providence, Pawtucket, or Woonsocket), had a birth parent aged 40 and older, and had a birth parent with less than a high school education.[2] A more detailed comparison of assessment completion rates by some of these demographics, such as race/ethnicity, may help identify if there are additional ways to reach these families for assessments or if service referral and receipt gaps exist that should be addressed. Families not completing assessments may have different referral experiences and needs, so it is important for the RIBDP to continue to try to reach all families eligible for an assessment.

Referral gaps (lack of referrals to a service) were more common than those in service receipt or helpfulness. Parent support groups and RIPIN had low referral rates. Family members of a child with a birth defect, including siblings, may require psychological support.[4,5,6] Healthcare professionals should share support group information upon the initial diagnosis.[4] Parent support groups are a resource to connect with other families who have a similar experience,[4,6,7] and can be valuable in reiterating information received from healthcare professionals.[4] When needed during assessments, the RIBDP's CCHW provides information on RIPIN and condition-specific parent support groups to families. In addition to providing referrals, the RIBDP will continue to raise awareness of the value of parent support services with families and healthcare professionals to ensure families receive needed support.

Initial assessments were most often completed more than one year from birth. Families may not have initially required resources[7] or were initially overwhelmed with the child's diagnosis[4] but were willing to share their experiences when the CCHW reached out again.

All assessment conditions impact children and their families; however, every family may not need every service. It is important for healthcare professionals, who are the primary access point to service referrals, to recognize when a child could benefit from certain services and to refer families as needs are identified. It is also important to offer services to families often over the course of a child's care as needs may change over time.[6,7] Families may be overwhelmed with their child's diagnosis and not always recall information shared with them previously.[4] The RIBDP's service assessments also play a role in service referral, as seen with referrals made by the CCHW, including Early Intervention, RIPIN, and Medicaid/Katie Beckett. As each family completes an assessment, the CCHW identifies any new referrals needed and follows families with transitions to Special Education services if needed.

Once a family receives a referral, there may be barriers to overcome to receive the service, including language, income, education, and culture.[4] Financial barriers facing families may include taking time off or losing a job for visits, costs associated with traveling for care, medical costs not covered by health insurance, and finding and paying for home care and/or childcare.[4,6,8] During assessments, the CCHW raises awareness of and refers families to financial resources, such as Medicaid/Katie Beckett and Supplemental Security Income (SSI), and other programs for help with housing and food insecurity.

Connecting families with needed services early in the child's life can help improve outcomes for both the child and

family. As part of a family-centered approach, the RIBDP's service assessment process connects families with a CCHW who can identify concerns and link them to resources. In addition to conducting more detailed analyses of assessment data, the RIBDP will continue to identify improvements to its assessment process and raise awareness of identified service referral gaps with healthcare professionals.

Limitations

Data were self-reported by families and subject to recall bias. There may also be response bias from collecting surveys via three different methods. Families who didn't complete an initial or follow-up assessment may have different referral and receipt patterns. There may also be differences in referral, receipt, and helpfulness of services between types of assessment conditions. Lastly, referral data captured the results of the most recent assessment. If a family completed follow-up assessments, service referral and receipt may have changed over time.

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Rhode Island Monthly Vital Statistics Report
Provisional Occurrence Data from the Division of Vital Records

VITAL EVENTS	REPORTING PERIOD		
	JULY 2024	12 MONTHS ENDING WITH JULY 2024	
	Number	Number	Rates
Live Births	940	10,836	10.2*
Deaths	874	10,727	10.1*
Infant Deaths	2	45	4.2#
Neonatal Deaths	2	35	3.2#
Marriages	593	6,460	6.1*
Divorces	211	2,542	2.4*

* Rates per 1,000 estimated population
# Rates per 1,000 live births

Underlying Cause of Death Category	REPORTING PERIOD			
	JANUARY 2024	12 MONTHS ENDING WITH JANUARY 2024		
	Number (a)	Number (a)	Rates (b)	YPLL (c)
Diseases of the Heart	231	2,394	218.2	3,002.5
Malignant Neoplasms	183	2,272	207.0	4,666.0
Cerebrovascular Disease	39	468	42.6	550.0
Injuries (Accident/Suicide/Homicide)	105	1,026	93.5	12,611.0
COPD	37	429	39.1	407.5

(a) Cause of death statistics were derived from the underlying cause of death reported by physicians on death certificates.
(b) Rates per 100,000 estimated population of 1,097,379 for 2020 (www.census.gov)
(c) Years of Potential Life Lost (YPLL).

NOTE: Totals represent vital events, which occurred in Rhode Island for the reporting periods listed above.
Monthly provisional totals should be analyzed with caution because the numbers may be small and subject to seasonal variation.

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Ethics of Case Report Publications

JOSEPH H. FRIEDMAN, MD

A couple of years ago I reviewed a book[1] about institutional review boards (IRB) overstepping their mandate. The book, privately published by a Family Medicine professor at Baylor, was entitled, "From Oversight to Overkill."[2] It noted a problem that I, too, have complained about, of IRBs extending their intended role of protecting research subjects, to protecting their institutions. The book argued that many lives have been lost due to unnecessary delays in research trials due to a variety of unimportant issues. My focus here is different, but related, namely, medical journals requiring informed consent, under the guise of protecting personal information when individual cases are described, even when there is no revealing information.

Here is the example that triggered this column. "Among my current 44 Parkinson's disease (PD) patients treated with clozapine, a 74-year-old woman was treated with filgrastim for three months due to persistent severe neutropenia (absolute neutrophil count 600) which began 11 months after starting clozapine while taking 75 mg/d. She has not required it for the past nine months despite no change in medications." I also described two additional patients with similar degrees of "identification." The editor reported that he contacted the editor of another journal and both agreed that I would need consent from the patients or that I had to alter the description to make them less identifiable. The editor suggested, "a broad summary, stating something like, "among 44 PD patients taking clozapine in my clinic, four have had clinically significant neutropenia, xx required filgrastim…" How this differed from my presentation still escapes me. I was unable to identify one of the three patients when I looked for contact information to get the approvals. Luckily, the staff member in my office who handles the clozapine remembered who it was. I recalled the other two as these issues were recent and we had spoken a few times recently. I could not have identified them from my manuscript, even though I follow them myself, without a nurse or physician assistant. Identifying any of these patients, even in my office using our electronic medical records (EMR), would have been impossible without reading thousands of records. My staff didn't know who the other two were.

All three were happy that they could contribute to a medical report on PD. The request for consent did not cause any problem. The letter to the editor was approved for publication. Although it contained only a small amount of data it actually is important, since data in this particular area are very sparse and my letter was in response to a report, also with very limited data, that suggested a much reduced need for monitoring clozapine than my limited data suggested. At a time when European drug agencies are reviewing monitoring requirements for clozapine, these small data are useful. So, why should there be impediments to reporting? Even if someone had access to my EMR they would be unable to identify these patients. If I couldn't identify all three using my EMR and I knew them all well, how could anyone else? I follow a couple of thousand similar patients. If one of these patients was paranoid, or didn't like me, that case could not be published in its proper context, reducing its value. I can easily imagine other situations where subject refusal would make the project useless.

I believe that the initial notion of obtaining informed consent for case reports started in 1999 with a case report in the *New England Journal of Medicine* (NEJM).[1] Perhaps it occurred earlier, but the fact that the NEJM published the report without requiring the consent indicates that if the issue had been raised prior, it was not a standard procedure

I recall the episode because it attracted attention in the news, and the senior author was a distinguished neurologist in whose laboratory I had been a research assistant 20 years prior. The NEJM article was a case report published as a letter to the editor about the street drug, Ecstasy, causing parkinsonism.[3] There were no identifiable data but the "personal health information" of age, gender

and having been seen in Michigan were. However, the patient sent an irate letter to the journal, apparently without a request to remain anonymous. "I find it hard to believe that physicians at an institution like the University of Michigan would submit such a letter about me without telling me beforehand and then using incorrect information to make their claim."[4] The response, which noted that the information labeled as incorrect, that he had smoked marijuana, was provided by his friend, sitting with him in the office, and not contradicted at the time. "Our patient believes that he should have been informed about our letter before we sent it to the *Journal*. We followed the current practice for publishing clinical observations, which does not include a requirement to inform the patient about the submission. Moreover, we assiduously protected the patient's confidentiality. We did not identify him by name, we published no photographs of him, and we provided no information that would enable any reader to determine his identity."[4]

It is rare that a medical report provides actual identifying information. Only in cases where one might plausibly identify the patient should consent be required for publication. In my field of movement disorders written consent, or blurring of the face, is always required for the videos we publish. It is rare otherwise for this to be necessary. Obviously, journal editors see things differently. Will we need consent to discuss cases at conferences? ❖

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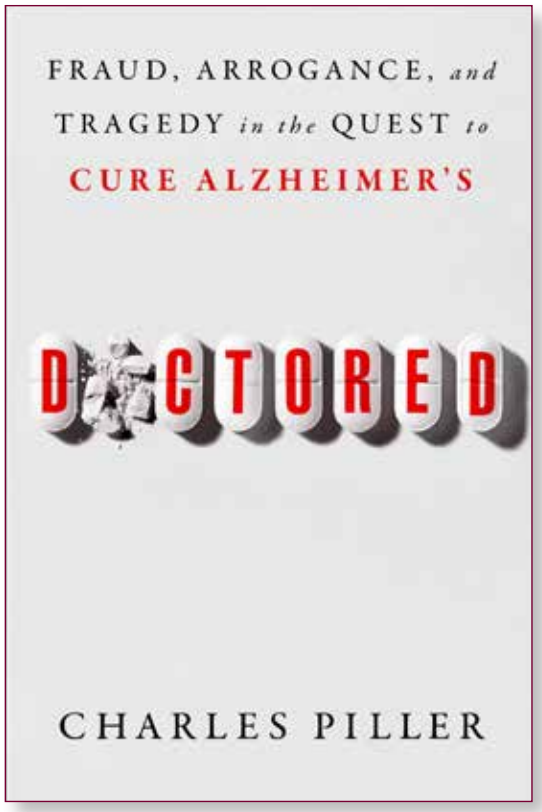
Doctored: Fraud, Arrogance and Tragedy in the Quest to Cure Alzheimer's

JOSEPH H. FRIEDMAN, MD

"J' Accuse" could be another subtitle for this book.

In some ways, *Doctored* by Charles Piller bears a reasonable similarity to *Bad Blood*, the story of the Theranos business fraud. Both involve the medical community. *Doctored*, however, is much more disturbing, as it undermines the credibility of research in Alzheimer's, the research data itself, but also unmasks the complicity of and enablement by lab-based researchers, research journals, universities and corporations. By extension it creates concern for all medical research, at least in the United States. *Bad Blood* involves the sociopathic but brilliant couple who started and ran the fraud, their famous but credulous supporters, and their almost as famous, incredibly diabolical lawyer. That story had good guys and bad guys. This story has brilliant researchers whose ambition overran their ethics, an established set of experts who, according to the book, have been unwilling to remove their blinders, and an infrastructure too weak to guard its own foundations. The fall guys are primarily the public.



Publisher: Atria/One Signal Publishers (February 4, 2025), Length: 352 pages, ISBN13: 9781668031247.

As a neurologist who has been an attending in Rhode Island since 1982, I have seen our understanding of dementia change from the simple "senile" categorization of older dementia patients to a complex set of diagnostic clinical and pathological criteria that explicitly defines itself as a work in evolution. I am not an "official" dementia specialist, but my focus on Parkinson's disease and other neurodegenerative movement disorders has obliged me to develop expertise in dementia, which often complicates these disorders. I have no background in laboratory science but do have extensive experience in clinical research and peer review. My professional background and my advanced age mean that I have some skin in this game.

I have observed the development of the amyloid cascade hypothesis and the numerous failures of treatment regimens that targeted amyloid. Just prior to the Covid epidemic, I attended our weekly Neurology grand rounds to hear a prominent Alzheimer's disease expert report that when he gave a similar talk 10 years prior, he had outlined the numerous studies that had just begun and was then optimistic. At the talk I attended he had to report that every single study was a failure and that he saw nothing new that was promising.

PHOTO BY MIKE MCGEE

Charles Piller

Charles Piller is an investigative journalist for *Science* magazine and his work has appeared in the *Los Angeles Times*, *The New York Times*, and more. Piller has been honored with many national journalism awards, and is the author of *Gene Wars, The Fail-Safe Society*, and *Doctored*. He has reported on public health, biological warfare, infectious disease outbreaks, and other topics from the United States, Africa, Asia, Europe, and Central America.

When the first anti-amyloid drug was approved a few years later, after none of the 11 members of the FDA's advisory committee recommended it, I was dumbfounded. It appeared from my outside perch that the drug industry had taken over the FDA, as the book suggests. Its subsequent actions have not been reassuring. And now, *Doctored* comes out, after earlier lengthy critiques published in *Science* and the *New York Times* by the same author, who concludes that the whole basic science effort was riddled with fraud and continued self-delusion. This book comes at an inopportune time, as the country threatens to favor a "common sense" form of Lysenkoism over science in medicine and public health.

The accusations of fraud have all been shown to be true. It is a weakness of this book that almost all the fraud accusations are based on western blot chromatographs, initially revealed by a young neurologist/lab researcher, Matthew Schrag. Not having a laboratory background, I am not able to judge for myself the importance of the falsifications of the western blots, but several papers, including some with thousands of citations, were withdrawn by the authors, and some by the editors.

Unfortunately, the majority of papers with published documented evidence of data forgeries, acknowledged by the researchers themselves, have not been withdrawn. More difficult to fathom are the continued citations of withdrawn papers by researchers trying to bolster their own conclusions. Only one set of corporate-run clinical trials was cited in the book as fraudulent.

In my own area of clinical research in movement disorders, I have never had any suspicion of clinical trial fraud by my colleagues. A prominent clinical researcher in AD has privately expressed the same confidence in that field as well. Of course, in open-label clinical studies, wishful thinking often produces bias that produces misleading results, but this is known to readers once they see that the study is open label. I recall a well-known colleague discussing the near-miraculous effect of a particular drug on dementia. The other attendees at the meeting suggested that we send our patients to him for treatment since the drug didn't seem to work anywhere else. This same neurologist touted an open-label study of an experimental compound as a miracle drug for Parkinson's disease, garnering national attention, as well as a featured example at a Harvard symposium on bad clinical research publicity. I include this only to show that Alzheimer's researchers aren't different than the rest of us. Most are principled, but some are not.

Piller's complaints go further. Once the amyloid cascade hypothesis was embraced by the leaders in the field, its supporters, including grant reviewers and administrators at the National Institutes of Health (NIH) and editors at major journals, created an atmosphere that was biased against hypotheses that were not amyloid-based. Thus, research dollars increasingly were funneled to amyloid research and away from other reasonable targets. While the amyloid skeptics complained, its supporters, while acknowledging the faulty hard science, continued to back the theory in the face of the evidence, without supplying intellectual arguments. Piller writes, "I asked [Dennis] Selkoe [one of the most prominent laboratory researchers in AD and a supporter of the amyloid hypothesis] if he foresees a day when better and better anti-amyloid drugs will go beyond minutely slowing the progression of Alzheimer's. Will they improve cognition or even cure the disease? His downbeat answer surprised me: 'I doubt it.'"

Why should he then continue his strong support? Piller quotes another lab researcher here. "The major goal of these people is to win – if it isn't the Nobel Prize, it's God's glory. To be acknowledged that they really did something great," George Perry said. "They don't want the amyloid hypothesis to die, because then they have no legacy."

I contacted some Alzheimer researchers who know me to ask if they would write a short critique of the Piller arguments, based on his articles that are much shorter than the book, without needing to read the book. Two failed to respond and the third called me to explain that he wouldn't do it, as the Alzheimer research community had decided (I did not ask how this happened) to never engage with the author. I was gobsmacked. I then contacted a prominent researcher in parkinsonian neurodegenerative disorders at a major medical center, who told me that at his AD center, "avoiding counter arguments is typical." This colleague, a major researcher who is a born skeptic, has accused his AD colleagues of causing tens of thousands of excess deaths using anti-amyloid therapy. He accused the group of downplaying the treatment risks. Interestingly, in an article in *Neurology Today* (Jan. 16, 2025), a publication of the American Academy of Neurology, I learned of a proposed term by an amyloid supporter for the brain atrophy seen after anti-amyloid treatments, "amyloid removal pseudo atrophy," akin to labeling a failed chemotherapy treatment tumor "pseudo growth."

This book reveals a worrisome picture.

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Expert Witness: Federal Defenders; Beytin, Mclaughlin, Mclaughlin Attorneys

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Perseverance

LEONARD A. MERMEL, DO, ScM

In a windowless world
On a moonless night
My imagination roared
What I had in sight.
Darkness moved
My footsteps uncertain
God we know
Had pulled the curtain.
Blinked twice clearing my vision
An abyss lay before me
Had to make a decision.
My forefathers swore
Not give up hope
I stepped in
Climbed down rope.
There was no floor
And no ceiling
Walked through the door
With an uneasy feeling.
Trusting my spirit
Within my soul
Realized my dream
Found my role.
Lead in the darkness
When others cannot
Never give up
Fearnaught.

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Physicians concerned AI increases prior authorization denials

Reflects growing use of unregulated AI decision-making systems by health insurer industry

CHICAGO — Many physicians fear the health insurance industry's use of unregulated artificial intelligence (AI) automation and predictive technologies will increasingly override good medical judgment and systematically deny patients coverage for necessary medical care. According to a new survey from the American Medical Association (AMA), three in five physicians (61%) are concerned that health plans' use of AI is increasing prior authorization denials, exacerbating avoidable patient harms and escalating unnec-essary waste now and into the future.

Burdensome prior authorization requirements that conflict with evidence-based clinical practices and create hurdles to patient access to safe, timely, and affordable treatment have been a major impediment to patient care for decades. More recently, health insurers have turned to AI decision-making tools that generate prior authorization decisions with little or no human review. These AI tools have been accused of producing high rates of care denial – in some cases, 16 times higher than is typical.

"Using AI-enabled tools to automatically deny more and more needed care is not the reform of prior authorization physicians and patients are calling for," said AMA President **BRUCE A. SCOTT, MD**. "Emerging evidence shows that insurers use automated decision-making systems to create systematic batch denials with little or no human review, placing barriers between patients and necessary medical care. Medical decisions must be made by physicians and their patients without interference from unregulated and unsupervised AI technology."

To that end, the AMA firmly believes that AI must augment decision-making; be referred to as "augmented intelligence," and not remove humans from patient care, coverage, or treatment.

Notably, the AMA's Augmented Intelligence Research released earlier this month found that nearly half of all physicians (49%) ranked oversight of payers' use of AI in medical necessity determinations among the top three priorities for regulatory action. Moreover, recently passed AMA policy identifies significant concerns with insurer use of AI.

Physicians tell the AMA that delayed and disrupted care continues to be a predictable and maddening part of the patient experience, as widespread use of prior authorization programs by the health insurance industry persistently impedes the delivery of necessary medical treatments, jeopardizes quality care, and harms patients.

- **Patient Harm** – More than one in four physicians (29%) reported that prior authorization has led to a serious adverse event for a patient in their care, including hospitalization, permanent impairment, or death.
- **Poor Outcomes** – More than nine in 10 physicians (94%) reported that prior authorization has a negative impact on patient clinical outcomes.
- **Delayed Care** – More than nine in 10 physicians (93%) reported that prior authorization delays access to necessary care.
- **Disrupted Care** – More than four in five physicians (82%) reported that patients abandon treatment due to authorization struggles with health insurers.
- **Shifted Costs** – Four in five physicians (80%) reported that prior authorization delays or denials "at least sometimes" make patients pay out-of-pocket for medications.
- **Lost Workforce Productivity** – More than half of physicians (58%) who cared for patients in the workforce reported that prior authorizations have impeded a patient's job performance.

The substantial burdens associated with navigating the prior authorization process and fighting denials are contributing to physician burnout while forcing scarce resources to be redirected from patient care towards administrative tasks.

- **Added Burden** – Physicians reported completing an average of 39 prior authorizations per week, and nearly one in three physicians (31%) reported that prior authorization requests are often or always denied.
- **Physician Burnout** – Nearly nine in 10 physicians (89%) reported that prior authorization somewhat or significantly increases physician burnout.
- **Denial Trend** – Three-quarters of physicians (75%) reported the number of prior authorization denials has increased somewhat or significantly over the last five years.
- **Diverted Time and Resources** – The prior authorization workload for a single physician consumes 13 hours of physician and staff time each week, and two in five (40%) physicians employ staff members to work exclusively on tasks associated with prior authorization.

Not only does prior authorization negatively impact patient-centered care and add to crushing administrative burdens on physicians, but the AMA survey found it also results in significant waste and unnecessary costs across the entire health system.

- **Wasted Health Resources** – More than four in five physicians (88%) reported that prior authorization requirements lead to higher overall utilization of health care resources, resulting in unnecessary waste rather than cost savings. More specifically, physicians reported resources were diverted to ineffective initial treatments (77%), additional office visits (73%), urgent or emergency care (47%), and hospitalizations (33%) due to prior authorization requirements.

Despite mounting evidence that prior authorizations for drugs and medical services can be a hazardous and burdensome obstacle to patient-centered care, the AMA survey found the health insurance industry continues to show ineffectual follow-through on five key reforms that were mutually agreed to in January 2018 by the AMA and other national organizations

representing pharmacists, medical groups, hospitals and health insurers.

While UnitedHealthcare (UHC) and Cigna announced reductions in the number of services that require prior authorization in 2023, only 16% of physicians who work with UHC and 16% of physicians who work with Cigna reported that these changes have reduced the number of prior authorizations completed for these plans. In addition, physicians reported consistently high administrative burdens across all major health insurers when complying with prior authorization requirements. Physicians ranked UHC as the insurer with the most prior authorization hassles, with 72% of physicians giving UHC a "high" or "extremely high" burden rating. UHC was closely followed by Humana (64%), Anthem/Elevance (59%), Aetna (57%), Cigna (55%), and Blue Cross Blue Shield (54%) in high burden ratings for prior authorization.

The AMA continues to work on every front to right-size prior authorization programs so that physicians can focus on managing patient care rather than administrative burdens. Patients, physicians, and employers can learn more about reform efforts and share personal experiences with prior authorization at FixPriorAuth.org. ❖

FDA approves novel non-opioid treatment for moderate to severe acute pain

SILVER SPRING, MD — On Jan. 30, 2025, the U.S. Food and Drug Administration approved Journavx (suzetrigine) 50 milligram oral tablets, a first-in-class non-opioid analgesic, to treat moderate to severe acute pain in adults. Journavx reduces pain by targeting a pain-signaling pathway involving sodium channels in the peripheral nervous system, before pain signals reach the brain.

Journavx is the first drug to be approved in this new class of pain management medicines. The efficacy of Journavx was evaluated in two randomized, double-blind, placebo- and active-controlled trials of acute surgical pain, one following abdominoplasty and the other following bunionectomy. In addition to receiving the randomized treatment, all participants in the trials with inadequate pain control were permitted to use ibuprofen as needed for "rescue" pain medication. Both trials demonstrated a statistically significant superior reduction in pain with Journavx compared to placebo.

The safety profile of Journavx is primarily based on data from the pooled, double-blind, placebo- and active-controlled trials in 874 participants with moderate to severe acute pain following abdominoplasty and bunionectomy, with supportive safety data from one single-arm, open-label study in 256 participants with moderate to severe acute pain in a range of acute pain conditions.

The most common adverse reactions in study participants who received Journavx were itching, muscle spasms, increased blood level of creatine phosphokinase, and rash. Journavx is contraindicated for concomitant use with strong CYP3A inhibitors. Additionally, patients should avoid food or drink containing grapefruit when taking Journavx.

The application received Breakthrough Therapy, Fast Track and Priority Review designations by the FDA.

The FDA granted approval of Journavx to Vertex Pharmaceuticals Incorporated. ❖

FDA approves first rapid-acting insulin biosimilar product for treatment of diabetes

SILVER SPRING, MD — On Feb. 14, the U.S. Food and Drug Administration approved Merilog (insulin-aspart-szjj) as biosimilar to Novolog (insulin aspart) for the improvement of glycemic control in adults and pediatric patients with diabetes mellitus. Merilog, a rapid-acting human insulin analog, is the first rapid-acting insulin biosimilar product approved by the FDA. As a rapid-acting insulin, Merilog helps to lower mealtime blood sugar spikes to improve control of blood sugar in people with diabetes. The approval is for both a 3 milliliter (mL) single-patient-use prefilled pen and a 10 milliliter (mL) multiple-dose vial.

Merilog is the third insulin biosimilar product approved by the FDA and joins the two long-acting insulin biosimilar products approved in 2021 by the FDA. Approval of biosimilar products can increase patient access to safe and effective treatment options.

Like Novolog, Merilog should be administered within five to ten minutes prior to the start of a meal. Merilog is administered subcutaneously (under the skin) by injection into the stomach, buttocks, thighs or upper arms. Dosing of Merilog should be individualized and adjusted based on the patient's needs.

Merilog may cause serious side effects, including hypoglycemia (low blood sugar), severe allergic reactions and hypokalemia (low potassium in blood). Other common side effects may include injection site reactions, itching, rash, lipodystrophy (skin thickening or pitting at the injection site), weight gain and swelling of hands and feet.

"The FDA has now approved three biosimilar insulin products to treat diabetes," said Peter Stein, MD, director of the Office of New Drugs in the FDA's Center for Drug Evaluation and Research. "Today's approval highlights our continued efforts to improve the efficiency of the biosimilar approval process to help support a competitive marketplace and increase options for costly treatments, like insulin. Increasing access to safe, effective and high-quality medications at potentially lower cost remains a continued priority for the FDA."

The FDA granted approval of Merilog to Sanofi-Aventis U.S. LLC. ❖

FDA approves first treatment for cerebrotendinous xanthomatosis, a rare lipid storage disease

SILVER SPRING, MD — On Feb. 21, the U.S. Food and Drug Administration approved Ctexli (chenodiol) for the treatment of cerebrotendinous xanthomatosis (CTX) in adults. Ctexli is the first FDA-approved drug to treat CTX, a very rare lipid storage disease.

CTX is a genetic metabolic disorder caused by a mutation in a gene called CYP27A1 resulting in a deficiency of the enzyme that is important in the body's ability to break down fats. Due to reduced bile acid production in the liver, patients with CTX are unable to break down cholesterol in a normal way, resulting in deposition of atypical cholesterol metabolites (substances that result from the breakdown of cholesterol) in various places in the body including the brain, liver, skin and tendons, leading to damage to those organs and tissues. Ctexli works to replace deficient levels of one of the bile acids, reducing the abnormal deposits of cholesterol metabolites thought to be responsible for clinical abnormalities in CTX.

The efficacy of Ctexli for the treatment of patients with CTX was evaluated in a double-blind, placebo controlled, randomized crossover withdrawal trial. The 24-week trial demonstrated that treatment with Ctexli, 250 milligrams three times per day, resulted in significant reduction in plasma cholestanol and urine 23S-pentol (cholesterol metabolites that are markedly increased in CTX patients) compared to placebo treatment.

The prescribing information for Ctexli includes a warning for liver toxicity in all patients with increased risk for liver damage in patients with pre-existing liver disease or bile duct abnormalities. Patients should obtain liver blood tests before starting treatment, annually while on treatment and as clinically indicated. If signs of liver toxicity (e.g., stomach pain, nausea, fatigue, dark urine, bruising, yellowing of the eyes and skin, itching) occur, patients are advised to see their doctor and discontinue Ctexli.

The most common side effects of Ctexli are diarrhea, headache, abdominal pain, constipation, hypertension, muscular weakness and upper respiratory tract infection.

The recommended dosage is 250 milligrams, taken orally three times a day.

The FDA granted Ctexli Priority Review, Fast Track and Orphan Drug designations for this application.

The approval of Ctexli was granted to Mirum Pharmaceuticals Inc. ❖

NIH-funded clinical trial will evaluate new dengue therapeutic

BETHESDA, MD — A clinical trial supported by the National Institutes of Health (NIH) is testing an experimental treatment designed to help people suffering the effects of dengue, a mosquito-borne viral disease. The study is supported by NIH's National Institute of Allergy and Infectious Diseases (NIAID), and will involve exposing adult volunteers to a weakened strain of dengue virus that causes a mild form of the disease and administering an investigational therapeutic at various doses to assess its safety and ability to lessen symptoms.

Colorized image of an Aedes mosquito. This species can transmit multiple diseases. [NIAID]

Dengue is transmitted via infected Aedes mosquitoes and sickens as many as 400 million people each year, primarily in tropical and subtropical parts of the world, according to the U.S. Centers for Disease Control and Prevention. In 2024, dengue cases surged to record levels in the Americas with local U.S. transmission reported in Arizona, California, Florida, Hawaii, and Texas. Dengue is endemic in Puerto Rico, which reported nearly 1,500 cases last year. Most people with dengue do not develop symptoms, but those who do commonly experience severe headache and body aches, nausea and vomiting, fever and rash. One in 20 people who get sick with dengue progress to severe illness, which may lead to shock, internal bleeding, and death. There is currently no Food and Drug Administration-approved treatment for dengue.

"When caring for a patient who is critically ill with dengue, healthcare providers have few options other than providing supportive care," said NIAID Director **JEANNE MARRAZZO, MD, MPH**. "We must find safe and effective therapeutics to provide much-needed relief to people suffering from dengue."

The new clinical trial will test the ability of AV-1, an investigational human monoclonal antibody therapeutic developed by AbViro (Bethesda, Maryland), to mitigate clinical symptoms when administered before and after dengue virus infection. The results of a previously completed NIAID-supported Phase 1 trial indicated that AV-1 is safe in humans, providing the basis for the new clinical trial to test its safety and efficacy.

The Phase 2 clinical trial will enroll at least 84 healthy adult volunteers at two sites: the Johns Hopkins Bloomberg School of Public Health Center for Immunization Research in Baltimore, and the University of Vermont Vaccine Testing Center in Burlington. Following an initial screening and physical examination, volunteers will be randomly assigned to one of two groups. One group will receive AV-1 one day prior to being challenged with a mild strain of dengue virus, and the other will receive AV-1 four days after being challenged with the dengue virus. Each group will be further subdivided to receive 100 mg, 300 mg, or 900 mg of AV-1, delivered in a 60-minute intravenous

infusion. For each of the three dosage levels, 12 participants will receive the investigational monoclonal antibody, and two will receive a placebo.

Before or after AV-1 dosing, each volunteer will receive an injection of attenuated (weakened) dengue virus. In earlier studies using this challenge virus, most volunteers developed a rash, and some had other mild dengue symptoms, such as joint and muscle pain or headache. None of the volunteers developed dengue fever or severe dengue.

Volunteers will participate in regular follow-up visits with study staff for at least 155 days to carefully monitor the effects of the investigational monoclonal antibody. Through physical exams, diary cards and blood samples, researchers will document how the volunteers' immune systems respond to the dengue virus challenge, how quickly the virus vanishes from their bloodstream and any symptoms they may experience. The researchers will use this information to determine how AV-1 affects the volunteers' ability to recover from dengue compared to placebo and to determine the dosages at which AV-1 may be effective.

If AV-1 shows promising results in this clinical trial, researchers may pursue further clinical evaluations of its safety and efficacy against dengue virus. For more information about the study, visit ClinicalTrials.gov and search the identifier NCT06799741. ❖

Senate commission, URI launch study to examine feasibility of state's first public medical school

KINGSTON — A Rhode Island State Senate study commission and the University of Rhode Island will partner with one of the nation's leading medical education consultants to study the feasibility of launching the Ocean State's first public medical school.

Following a competitive request process, Tripp Umbach has been selected to lead the feasibility study.

The study follows the formation of a Rhode Island State Senate special commission, appointed by Senate President **DOMINICK J. RUGGERIO** in July and co-chaired by URI President **MARC PARLANGE** and Sen. **PAMELA J. LAURIA**. The commission is charged with studying the state's health care workforce with a focus on educating and retaining primary care physicians, as well as examining how a medical school at URI could help alleviate that critical need.

"Few issues are as important as health care, and right now, our health care system is in critical condition," Ruggerio said when appointing the commission. "Strengthening the primary-care pipeline is an essential part of our work to make health care more accessible and affordable for Rhode Islanders."

Tripp Umbach is a nationally regarded firm with leadership in economic impact studies and consultation services for academic medical campuses and medical schools. Over the past three decades, the firm has measured the economic impact of all U.S. allopathic medical schools and more than 400 teaching hospitals for the Association of American Medical Colleges.

"We are excited to partner with such an experienced firm as Tripp Umbach," said **BARBARA WOLFE**, URI provost and executive vice president for academic affairs. "They have worked extensively with both allopathic and osteopathic medical schools. This includes public universities with medical schools centered on primary and community care, such as the University of Houston and Washington State University."

As part of the study, Tripp Umbach will collaborate with a broad range of stakeholders throughout the state, including local and statewide health care organizations, federal and state agencies, research institutions, medical education providers, and policymakers and professional associations. Their collective input will help shape the study's direction and outcomes.

Complementing the work of the Senate Commission, the study will evaluate the need and feasibility of developing a medical education program at URI, recently named the number one public university in New England by *The Wall Street Journal*. The study will also examine and make recommendations regarding workforce development, medical school models, enrollment projections, accreditation standards, financial viability and required resources, capacity to support clinical training, and medical research opportunities.

"Through numerous undergraduate and graduate programs in health care fields, including several that are nationally ranked, URI is enhancing the physical and mental health of individuals and communities locally and globally," said Parlange. "We are dedicated to broadening our impact for the good of the state, and we look forward to partnering with health care providers and elected officials to examine the need for and feasibility of a public medical school for the benefit of all Rhode Islanders."

Rhode Island is experiencing a net loss of primary care clinicians, and the shortage is expected to worsen in the years ahead. The inability of many Rhode Island residents to find primary care physicians is resulting in the use of community health centers and urgent care facilities to meet their medical needs, which strains resources and creates additional pressures on the health care system.

"As a double alumna of the University of Rhode Island, I am proud to co-chair the Senate commission, which could help reshape the future of higher education at the University," said Sen. Lauria. "The central question before our commission is how we can best address the serious challenges facing primary care in our state. Rhode Island is on track to be short about 100 primary care providers by 2030, which could leave 180,000 Rhode Islanders without access to primary care coverage. It is imperative that we act thoughtfully, expeditiously, and decisively to strengthen the primary care workforce and pipeline in Rhode Island."

While Rhode Island is home to a private medical school, no new medical schools have been established in the state since 1972 and no public medical school exists in the state. The final feasibility report is expected in June 2025. The special commission is scheduled to issue its recommendations to the Senate no later than Dec. 20, 2025. ❖

Appointments

Stephanie Psaki, PhD

Nikki Romanik, MD

Global health security leaders Stephanie Psaki, PhD; Nikki Romanik, MD, join Brown School of Public Health

PROVIDENCE – **STEPHANIE PSAKI, PhD**, and **NIKKI ROMANIK, MD**, former senior White House officials with the Biden-Harris administration, have been appointed distinguished senior fellows in global health security at the Brown University School of Public Health.

Based at the School of Public Health's Washington, D.C. office, the two leaders will play pivotal roles in advancing the school's global health and biosecurity initiatives. Psaki and Romanik bring a robust track record in navigating complex global health challenges at the highest levels of government.

"We are thrilled to welcome these two distinguished leaders to our community," said Dean **ASHISH JHA**. "Their unmatched experience in global health security and policy will enable us to deepen our impact on some of the most critical challenges in public health today. Through their leadership, our community will gain deeper insights into navigating complex health and biosecurity challenges and ensuring effective government and private sector responses to the most pressing global health challenges of our time."

As part of their time at Brown, Psaki and Romanik will engage with policymakers and leaders from around the world on global health and health security, write extensively on these topics and use their firsthand experience at the forefront of national and global health policy to help inspire the next generation of public health leaders.

Initiatives they will take on range from developing strategies to enhance biothreat detection, contributing to innovative vaccine manufacturing – including mRNA technology – while addressing gaps in sustainable financing for global health security. They will also lead discussions on how the lessons learned from COVID-19, mpox, Marburg, Ebola and other outbreaks can inform preparedness for future biological threats. They will work with scholars and practitioners across the field to shape discussions about the future of global health, including the role of the United States, and explore innovative approaches to addressing growing global health threats, such as those posed by climate change and humanitarian emergencies. ❖

Carole Billington, MSN, RN, NEA-BC, named President, Chief Nursing Officer for Saint Anne's Hospital

PROVIDENCE – **CAROLE BILLINGTON, MSN, RN, NEA-BC**, has been named president and chief nursing officer for Saint Anne's Hospital.

Billington has been with Saint Anne's Hospital for many years, most recently serving as interim president and chief nursing officer since September 2024. Her career began with Saint Anne's as a newly licensed registered nurse and she has held various nursing and administrative leadership roles throughout the years, including clinical advisor, clinical resource coordinator, patient care director of peri-anesthesia services, director of surgical services/endoscopy and cardiovascular program, administrative director of clinical operations, and chief operating officer/chief nursing officer.

"Carole's broad experience has uniquely positioned her to lead Saint Anne's into the future. She has played a pivotal role in the hospital's continued growth as a leading community hospital," said **SARAH FROST**, Chief of Hospital Operations for Brown University Health. "Under her leadership, Carole led the integration of Saint Anne's into the Brown University Health system and has expanded services and earned multiple national recognitions for patient care."

Billington holds a Bachelor of Science degree in nursing from the University of New Hampshire and a Master of Science in nursing from the University of Massachusetts-Dartmouth. She is board certified in nursing administration and as a nurse executive, advanced. In addition, she is a member of numerous professional organizations, including the American College of Healthcare Executives, the Organization of Nurse Leaders, the University of Massachusetts-Dartmouth College of Nursing and Health Sciences Advisory Board, the Bristol Community College Advisory Board, and the American Organization of Nurse Leaders. ❖

Sherri Sprague, MHA, BSN at Kent appointed to RI Board of Nursing

WARWICK — Kent Hospital Chief Nursing Officer **SHERRI SPRAGUE, MHA, BSN**, was appointed to the RI Board of Nursing. In this capacity, she is filling the Nursing Service Administrator seat. Her term goes through June 1, 2028.

The Board of Nurse Registration and Nursing Education is charged with protecting the health, safety, and welfare of the people of Rhode Island. The Board is composed of 15 members, each serving a term of three years. Board membership includes 11 professional nurses and two practical nurses appointed by the Director of Health and approved by the Governor and two members of the general public appointed by the Governor. ❖

Recognition

Don S. Dizon, MD, honored by ASCO

PROVIDENCE — The American Society of Clinical Oncology (ASCO), endowed by the American Cancer Society, recently announced that **DON S. DIZON, MD**, Director, Pelvic Malignancies Program and Hematology-Oncology Outpatient Clinics, Brown University Health Cancer Institute; Director of Medical Oncology, Rhode Island Hospital has been awarded the prestigious Excellence in Equity Award in recognition of his outstanding contributions to diversity, equity, and inclusion in cancer care.

The ASCO, in announcing the award, stated it highlights Dr. Dizon's unwavering commitment to promoting equity in oncology and his efforts to address disparities in cancer care. His work continues to shape the field, ensuring that all individuals, regardless of background, have access to the highest standard of care. His leadership extends across multiple roles, including director of The Pelvic Malignancies Program at Brown University Health, associate director of community outreach and engagement at Legorreta Cancer Center at Brown University, chairperson of the Hope Foundation for Cancer Research, and board member of the LGBTQ Cancer Network.

"This was unexpected, but a nice acknowledgment that efforts to reach others, whether ensuring opportunities are afforded to people equally or giving voice to the challenges experienced by underserved communities, remains important. This quest for equity embodies what all Americans strive for – a better life, liberty, the pursuit of happiness, afforded both fairly and justly. I am humbled and grateful to the American Society of Clinical Oncology for this award," stated Dr. Dizon. ❖

Rhode Island Hospital announces Comprehensive Stroke Center recertification

PROVIDENCE — Brown University Health's Rhode Island Hospital has received recertification from The Joint Commission (TJC) for its Comprehensive Stroke Center. Rhode Island Hospital is the only hospital in the state designated as a Comprehensive Stroke Center and provides care to more than 1,700 patients with stroke or transient ischemic attack annually throughout Rhode Island and southern New England.

Comprehensive Stroke Centers demonstrate the ability to evaluate and treat the most complex stroke cases and provide comprehensive services focused on acute management, risk factor modification, and recovery.

"Comprehensive Stroke Centers are recognized as health care leaders and are responsible for setting the national agenda in highly specialized stroke care. Such centers require major clinical services," said **SARAH FROST**, President of Rhode Island Hospital and Hasbro Children's, Chief of Hospital Operations. "It is an invaluable resource to all of Southern New England."

This is the ten-year anniversary of Rhode Island Hospital receiving Comprehensive Stroke Center designation, having received its initial recognition from TJC in 2014.

"Our team is proud to deliver world-class care to our patients," said **MELISSA HARMON, MSN, RN, ASC-BC**, Manager, Comprehensive Stroke Center. "We are also proud of our involvement with the community and many research programs."

"Our greatest reward is caring for our patients," said **STEPHANIE SOUZA, MSN, RN, ASC-BC**, Assistant Manager, Comprehensive Stroke Center. "But now and again, it's gratifying when the level of care we provide is recognized by a national organization. It means a lot for our staff, and we are proud of this accreditation – which we have now held for a decade." ❖