A Long-Distance Pre-Residency Well-Being Preparedness Curriculum for Emergency Medicine Interns

BY

DAVID DILLER
B.S., Cornell University, 2006
M.D., University of Vermont College of Medicine, Burlington, 2011

THESIS

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Defense Committee:

Ara Tekian, Chair and Advisor, Medical Education
Yoon Soo Park
Lalena Yarris, Oregon Health & Science University

This thesis is dedicated to my wife, Carly, and parents, George and Leslie. Without their support it would never have been accomplished.

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DSD

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ACGME	Accreditation Council for Graduate Medical Education
AMA	American Medical Association
LAC+USC	Los Angeles County + University of Southern California
NRMP	National Resident Matching Program
OHSU	Oregon Health & Science University
PGY	Post-Graduate Year

SUMMARY

A novel long-distance, asynchronous well-being preparedness curriculum that was delivered to medical students and administered by residency educators was developed and piloted. Qualitative analysis based on group interviews during orientation and one-on-one interviews conducted six months later were performed to evaluate the curriculum.

In general, participants were appreciative of the structure, content, and timing of the curriculum. They preferred content that was actionable and personalized to their own well-being interests and needs. Participants appreciated that residency leadership was committed to their well-being, however symptoms of burnout and imposterism remained prevalent during early residency training. Participants used support networks consisting of family, friends, co-residents, and attendings to promote their well-being and process the emotions and experiences of residency.

Future iterations of the curriculum should target individualization of content with crowdsourced recommendations from local senior residents and faculty members, and there should be special emphasis placed on the importance of developing support networks for well-being promotion. Consideration should also be made for resilience training.

I. PURPOSE

A. Background

Residency training has been described as the “nadir of personal wellness in a physician’s career” (1). When compared to both medical students and attending physicians, residents consistently demonstrate higher levels of burnout and decreased overall wellness (2–7). Recent studies have demonstrated a prevalence of burnout ranging from 28% among PGY-1 psychiatry residents (8)to 76% among emergency medicine residents (9), suggesting an alarming ubiquity of burnout within graduate medical education (8-17).

Burnout is defined as “a syndrome of emotional exhaustion, depersonalization, and a reduced sense of personal accomplishment” (18). In contrast, well-being is more than just the absence of burnout (19); it is the holistic sense of confidence, energy, empathy, enjoyment, and purpose, that allows physicians to develop their full potential across personal and work-life domains (20, 21).

Burnout is associated with a host of professional and personal ramifications, including decreased empathy, diminished altruism, worsened patient care, increased medical error, worsened job satisfaction, depression, marital difficulties, substance abuse, and suicidal ideation (5,7,9,17,22-27). These findings led the Accreditation Council for Graduate Medical Education (ACGME) to modify its common program requirements to mandate prioritization of burnout recognition and well-being promotion through the establishment of policies and educational programs (28).

B. **Rationale for Curricular Content**

Numerous curricula targeting either burnout prevention or well-being promotion have been developed for graduate medical education (29-32). However, with half of all graduating medical students experiencing burnout before the start of residency training (10,33), and numerous studies emphasizing the long lasting psychological effects of burnout (34-37), it is crucial that residency programs address these topics as early as possible. Addressing these topics early in a trainees education may improve their ability to develop individualized well-being and burnout prevention strategies that can be used through residency and beyond.

C. **Rationale for Curricular Timing**

The period between “Match Day” and the commencement of internship may be ideal for addressing these important issues. Though the final year of medical school seeks to facilitate the transition from medical school to residency (38-42), the quality of existing educational programming during this time has significant variability and is of questionable benefit to learners (38-42). While many specialty-specific preparatory courses have improved student skills and confidence prior to starting residency, these “boot camps” overwhelmingly focus on improving medical knowledge and procedural skills and have traditionally been limited to in-person settings (43-50).

Further, these residency preparedness courses have traditionally been implemented by medical school faculty. We hypothesize that after the Match Day, graduating medical students are eager to engage with embracing their new professional identity as resident physicians (51), and we see this time period as an opportunity for residency program faculty to engage with their soon-to-be interns in providing long-distance educational instruction that will enhance their residency experience. Long distance education is beneficial because it allows learners and educators to connect asynchronously and/or virtually, without the two parties needing to be in

the same location. Long-distance educational curricula have been successfully implemented in multiple disciplines, including continuing medical education (52), interprofessional education (53), and even in a pre-residency surgical knowledge and skills preparatory curriculum (54). However, no long-distance curricula exist to address the problem of well-being preparedness in residency training.

D. **Purpose of the Study**

Accordingly, we aimed to develop and evaluate a long-distance, asynchronous curriculum designed to improve well-being preparedness prior to the start of intern year.

II. METHODS

A. Design

We performed a qualitative evaluation of a burnout and well-being curriculum delivered to medical students in the transition between the Match Day and the first day of internship at two United States emergency medicine residency programs. The curriculum was implemented between March and June 2019. The University of Southern California ethical review board determined the study was exempt.

B. Study Setting and Participants

The study took place at the Los Angeles County / University of Southern California Medical Center (LAC+USC) and Oregon Health and Science University (OHSU) emergency medicine residency programs. Medical students who participated in the 2019 National Resident Matching Program (NRMP) and who matriculated at the participating research sites were considered eligible for participation in the study. Those who did not participate in the 2019 NRMP or those with prior residency training experience (i.e. a resident who was switching specialties) were allowed to participate in the curriculum but were excluded from analysis.

C. Curriculum Development

Using Kern's six-step approach (TABLE I) (55), we reviewed the literature and conducted a targeted needs assessment through a series of focus groups at the primary study site (56). Among domains taken from the American Medical Association (AMA) resident well-being framework, we found the areas of emotional health, mindset & behavioral adaptability, and financial health to be of greatest need for incoming interns (56-58).

TABLE I
KERN'S SIX-STEP APPROACH TO CURRICULUM DEVELOPMENT FOR MEDICAL EDUCATION (55).

1. "Problem identification and general needs assessment"
2. "Targeted needs assessment"
3. "Goals and objectives"
4. "Educational strategies"
5. "Implementation"
6. "Evaluation and feedback"

We then developed objectives to address these three areas of need. We sought to provide incoming residents with an enhanced awareness of the forces that can affect well-being at the time of transitioning to residency, and to use the specific skills and knowledge from the course to create a foundational well-being plan for the commencement of residency.

Curricular content was delivered through a long-distance, asynchronous format, allowing participants the flexibility to complete the curriculum based on the demands of their individual schedules. After Match Day, students were sent a package that included an outline of the goals and objectives of the curriculum, a syllabus, a link to an online portal where curricular activities could be accessed, a link to a pre-course knowledge assessment, and a journal that would be used for part of the curricular activities.

The multimodal curriculum was approximately twelve hours long, and students had approximately six weeks to complete the required content before intern orientation. Curated educational content selected by study authors (DD, MS, JR, AJ) from books, TED Talks,

podcasts, blog posts, and an interactive mobile app, Headspace® (Appendix). Content was provided in a digital format to allow students flexibility in selecting media they viewed as preferable, either due to their learning preference (59) or for their convenience (e.g. while traveling). A mobile app, Headspace®, was chosen as the means for introducing mindfulness in the curriculum because studies have demonstrated the effectiveness of brief online mindfulness training in improving stress, mindfulness, empathy and resilience.[60–63] The Headspace® app has received recognition as the highest-rated mobile application, based on the Mobile Application Rating Scale (64).

Throughout the curriculum, participants were asked to complete multiple reflective writing assignments, which have been shown to improve mental health and promote behavior change (65,66). To encourage honest reflection, writing assignments remained confidential and were not shared with other trainees or faculty members. Participation in the curriculum was mandatory, however compliance with assignments was not enforced, as the study authors felt that additional requirements would work against the overall curricular theme of well-being promotion. Additional curricular activities were available for participants to complete if they desired to receive more education on a particular topic.

D. Data Collection

The Kirkpatrick Model (67,68) guided our approach to program evaluation. Learner reactions were evaluated through group interviews performed during intern orientation (immediately after completing the curriculum). One-on-one semi-structured interviews conducted six-months into residency explored learner behaviors and application of content to their practice.

Residents were recruited to participate in group interviews by author DD during an in-person announcement during intern orientation at LAC+USC and through email invitation at OHSU. Interviews were conducted by faculty members with experience in qualitative interviewing (JR, LY). An interview guide was created in an iterative process to explore the participants experiences with the content and structure of the curriculum. Two group interviews, consisting of 5-6 participants at each respective study site were performed, lasting 30 and 50 minutes. Consent was obtained prior to interview participation, and residents were given breakfast for their participation. Group interviews were audio-recorded and transcribed as close to verbatim as possible. Transcriptions were de-identified.

To explore residents' perceptions of the curriculum after six months of residency training, 11 one-on-one, semi-structured interviews were conducted with residents in the LAC+USC program (n = 7) and the OHSU program (n = 4). An interview guide was created based on the objectives and content areas of the curriculum. Participants were recruited through email invitation by author DD. Participants were asked about their personal definitions of wellness and how they have adapted to their residency training thus far. Interviews ranged from 45 minutes to 1 hour in length and were conducted by a faculty member (JS) with experience in qualitative interviewing. Participants received gift cards valued at $150 after completing their interviews, which were audio-recorded, transcribed, and anonymized. Pseudonyms were assigned to participants for reference to their quotations throughout the manuscript, and group interview participants were identified by the location of their training site.

E. Data Analysis

A thematic analysis that was informed by the structure and objectives of the curriculum was used for the primary coding of the effectiveness of the curriculum. Both group interviews

and individual semi-structured interview transcripts were uploaded to qualitative data analysis software, Dedoose for organization and facilitation of analysis. Three authors (JS, MS, DD) identified and defined codes based on structural components of the curriculum, and recurring elements grounded in the participants' responses. Once the authors agreed on a list of codes and definitions, the codes were applied to the transcripts line-by-line. Forty-six codes were initially identified from the group interviews, and 32 codes were initially identified from the individual semi-structured interviews. Overlap between code applications were analyzed to identify major themes in participant responses related to reception of curricular content, participants' personal definitions of wellness, and continued engagement with wellness resources throughout training. The authors engaged in reflexive memoing about their coding experiences, met regularly to continuously discuss code definitions and applications, and conducted inter-rater reliability tests on a subset of data, achieving an overall Cohen's kappa of .70, which indicated good agreement between coders.

III. RESULTS

A. Overview

Five major thematic domains were identified in the interview responses. Total applications of the major top level themes ranged from 40 to 170 comments. These domains are discussed in detail with select quotes and interpretations that seek to evaluate the curriculum residents participated in and gain perspectives into how this endeavor can be expanded to provide a holistic interpretation of personal growth for resident physicians in and outside of the workplace.

B. Reactions to the Structure and Timing of the Curriculum

Participants appreciated the flexibility of the asynchronous curriculum and felt that it allowed for a degree of personalization of the course schedule. Individuals' schedules varied significantly between the Match Day and the residency orientation, and the asynchronous nature of the curriculum allowed for participation and completion of the activities without the rigidity of a structured schedule. One participant explained, "It was all on your own time, so whenever you have the chance, you can just sit down and spend five minutes or even twenty or thirty minutes to do it." (LAC+USC)

Participants voiced mixed reactions to the timing of the curriculum, with some expressing concern that the assignments during this transitory period added undue stress. For example, one resident described the tension associated with receiving mixed messages about how to spend their time:

> [The curriculum] just seemed like a lot when every resident, and everybody you talk to is telling you "Just relax. Enjoy your time off." The minute you do this stuff, there's a lot going on already to just add another component to the time when I was really just trying to enjoy the time I have off. It ended up being more stressful than I think the intent was. (OHSU)

Residents perceived this transitory period to be the last opportunity they had to relax before beginning the stressful process of residency training. They also suggested that our well-being program was initially viewed as an additional stressor that impeded on the student's time. One resident described this irony, stating:

> When I first got [the curriculum], it was a big groan and a roll of the eyes for me... I only have so much time left here. I'm going to move across the country. I want to enjoy whatever sweet last nothings of my med school career before residency. (LAC+USC)

These feelings of anticipatory anxiety surrounding the perceived loss of freedom were associated with the transition between the relatively low stress last portion of the fourth year of medical school and the coming responsibilities of residency. One participant expressed this pervasive attitude in terms of loss, stating "I only have so much time left here" (LAC+USC). This revealed one of the important areas this curriculum and others like it can address; the projection that relaxation will be impossible once starting residency.

However, most residents appreciated the timing of the curriculum. One resident discussed the appropriateness of the curricular timing by stating:

> It's not too close to when you start [residency] but it's not too close to Match Day when you're overwhelmed... Having that reminder in the middle of that cycle when you're like, "Remember you're a human. You're going to be doing things soon. How do you feel about all that?" It was really helpful for me. (LAC+USC)

Residents felt that the timing of the curriculum aligned with what they were experiencing during this transitory period in their lives with regards to moving, adjusting finances, and recalibrating psychologically in preparation for a new set of work-related responsibilities. The timing of the curriculum allowed the well-being preparedness content to serve as a framework that they could build upon as they started their residency training.

C. Interns Valued Actionable and Personalized Curricular Content

Interns agreed that elements of the well-being curriculum varied with regards to their perceived relevance. They believed that curricula aimed at burnout and well-being should not be one-size-fits-all, but rather tailored to the individual. Dr. H commented, “I think it’s person dependent with the particular stressors. For me the sleep thing is a little bit less of a stressor, the social life is a little more of a stressor; [work] hours are a little bit less.”

Allowing participants the flexibility to explore different content areas in greater or lesser depth was appreciated as it allowed for greater individualization. One resident voiced this sentiment, saying:

> Some people would just cruise through the reading packets because that was most relevant to them and maybe the podcast took a second chair to it. That’s okay for wellness because I think wellness is about doing the things that are important to you and if it’s not beneficial to you there’s no point doing it. (LAC+USC)

Interns also appreciated practical, actionable well-being recommendations over abstract concepts. For most participants, the concepts of burnout and well-being discussed within the curriculum were not novel. However, when curricular resources referenced/alluded to the inevitability of burnout, they had an anxiety provoking effect. When these concepts were presented with actionable individual-level suggestions, participants were appreciative. One participant elaborated on this concept further:

> I think when I hear it from others, it’s more theoretical. At some point, do this. At some point, you might want to think about this. This [curriculum] is like, do this now, this is what you need to be doing; get disability insurance, make a budget now. Having it told to me like that was helpful. (LAC+USC)

Another participant echoed similar sentiments:

> In the podcast, I like the actionable things like, “Here are things you could do on your own.” Like, “Here’s how to improve your sleep.” Or, “Twenty percent of your time spent doing something that means something to you has shown to have positive effects.” (LAC+USC)

In particular, interns found the financial health content to be valuable and well-timed. Most participants reported not receiving adequate personal financial education prior to the start of residency and that personal finances and debt management adversely impact resident well-being. One participant commented:

> There's a lot of different things causing anxiety when you're transitioning to residency. I think the financial aspect of it is something that's pretty high up on everyone's list, and it doesn't get a lot of attention. So, I was pleasantly surprised to see some of that in [the curriculum]. (LAC+USC)

For some interns, this was their first paying job, and for many, the amount of debt they had accumulated was overwhelming to think about. Dr. A elaborated:

> Money was terrifying the entire four years [of medical school] just because the amount of debt that I was going into was more than my family could have ever imagined. It's more than their house and everything was worth … Going through some of the resources in the curriculum … Those really helped to kind of bring familiarity to those topics and to reassure me because I knew a little bit more about my situation and had a couple of potential ways I could address it.

Interns appreciated specific recommendations that targeted debt management and budgeting as it was directly relatable to their individual situations. As the above quote mentions, the amount of debt accumulated and lack of wealth and financial freedoms that incoming interns experience compared to their non-medical peers, should not be overlooked as a source for stress, anxiety, and as a negative influence towards their overall well-being.

D. Residency Program's Commitment to Well-Being

Interns uniformly agreed that the well-being curriculum demonstrated genuine support from their residency program leadership. They were comforted to know that the residency program cares about their personal well-being. One participant commented, "It was nice because it made it clear that this residency actually cares about wellness. It was very upfront

even before starting residency that it's important to [the residency program]." (OHSU) Similarly, another group interview participant stated:

> That's the most important thing for me, is that it felt like I'm definitely going to get medical education here, but they're also going to care about my financial well-being and my mental well-being and all of these things are going to be addressed. I can trust that this is not something I have to do entirely on my own. I can show up and these will be accounted for. (LAC+USC)

Incoming interns are at a particularly vulnerable stage in their professional careers. Sometimes there is a large gap between their knowledge and skills, and what is expected of them by their patients, their profession, and society. Medical errors, feelings of imposterism and inadequacy, and burnout can all lead to emotional and psychological instability. Establishing and building trust is vital for residency leadership to be able to adequately provide support and mentorship to their residents. The well-being curriculum established this trust at both residency sites because its goals were recognized as authentically beneficial to the participants. Dr. L echoed this sentiment:

> I think it was nice to have the institution recognize that there are issues in residency, and be like, "You know, we can't fix all these, but we know that they exist"... And I think it was a nice kind of foot in the door to be like... we care about your wellness. This is a priority of ours and it's going to be one of the first things we throw at you when we accept you into the program.

E. The Curriculum Did Not Prevent Feelings of Burnout and Imposterism at the Start of Clinical Training

Despite curricular content targeting emotional health and mindset, interns commented that the increased responsibilities of providing autonomous patient care triggered feelings of inadequacy, self-doubt, and imposterism during their first several months of training. Dr. F stated,

> I know in the beginning of residency I was pretty overwhelmed by the autonomy, going to just being a doctor all of a sudden and then you having autonomy and feeling like you still don't know anything, but you're making decisions and quite frankly, making mistakes. That can be really difficult.

The emotions experienced by interns varied depending on the acuity and complexity of the individual patients they cared for on a given shift. Each patient encounter was viewed in a binary fashion, as either a success or a failure. When a patient presentation was too technically advanced for the intern to manage independently, they felt a surge of negative emotions. Dr. G noted,

> I saw the patient, they looked sick, and I just froze and I was like "I don't know what to do". And then I ran and grabbed my senior resident and he swooped in and did everything, and was very organized, and mobilized people. So it just makes you feel very incompetent and helpless. Typically you're the doctor and this is my patient, but it made me feel really helpless.

In addition, interns acknowledged that residency training was already starting to affect their emotional well-being. For some it was the difficulty in separating from work and creating appropriate work-life balance. Dr. A commented,

> It's hard to escape work. I'm usually thinking about some aspect of work, whether it's the shift I just had or some topic that I was, maybe I had a patient and I didn't fully understand what the presentation was, or some topic around how they presented. Thinking about that and trying to figure out where the gaps of knowledge are and how I can address those too… When I'm just by myself my mind spends a lot of time going back to medicine.

For others it was a developing cynicism and depersonalization of patients in the clinical environment, a trait that was exhibited by some of their senior residents. Dr. B stated:

> It was a general feeling of not wanting to go to work, and when I was at work not wanting to see patients … Once you're actually seeing the patient, if it's not something that you 'deem' emergent or urgent, you're just kind of over it, to put it in ineloquent terms. That's really what it felt like to me, and I started to recognize that… Maybe I'm just feeling actually burnt out and this is what it feels like, because I didn't really know what [burnout] meant.

Yet others experienced emotional and physical exhaustion. Dr. G commented, "When you work so much it's really hard to keep that humility in check, because you just work so much and you're so tired. It's hard to always be a good person when you're that tired."

While a reduction in burnout was not a goal of the curriculum, the quotes above demonstrate the profound impact that early clinical training has on interns' emotional health. Further, Dr. B illustrates in her quote above that even with proper training, interns might not fully appreciate, or even recognize, burnout until they experience the symptoms themselves.

F. Support Networks are Unequivocally Important in Resident Well-Being

Despite not being explicitly mentioned within the pre-residency well-being curriculum, interviews revealed that interns deeply relied on various support networks to promote their well-being including family and friends, co-interns, senior residents, and attendings. These support networks play a vital foundational role in the promotion of well-being preparedness at the start of residency and throughout the beginning of intern year.

With regards to feelings of imposterism, residents especially valued the support of their peers who were closest in proximity to their level of training because they were able to draw direct comparisons between the opinions, advice, and stories of these people to themselves. Dr. K stated, "One time I got… frustrated that I wasn't performing well, so I texted one of my co-residents and then we just ended up chatting for an hour on the phone just telling each other our struggles that we've been having. It was really nice to know that I wasn't alone in feeling this way."

Interns also found the opinions of their senior residents and attendings valuable when dealing with feelings of imposterism, as they viewed these sources with an aspirational lens and with a high degree of credibility. Dr. F noted,

> A lot of my problems come from feeling like I'm making mistakes and I'm having imposter syndrome … And for me, a big thing is hearing about other people who have gone through it … Hearing that, "Oh this senior resident who I really respect and really like also went through the same thing." I think that's always really reassuring for me.

In a different manner, interns relied on their family and friends without medical training to help separate themselves from work and create mental space away from thinking about medicine. Dr. A commented,

> It's great having your medically minded support groups, other residents and other people you meet in the medical field at the hospital, but you also need those folks that are non-medical to kind of balance you out… I feel like having that was really helpful and forced me to kind of put some separation between me and my work. So maybe, I don't know how you teach this to people, but emphasizing just how important having a support network is.

Each of these support groups provides socialization for interns to process their experiences and to provide emotional relief. Socialization and the establishment of multiple support networks appears essential to establishing a foundation for well-being and resilience at the beginning of residency training.

IV. DISCUSSION

A. General Findings

This study describes the implementation of a novel asynchronous, long-distance, pre-residency well-being curriculum at two separate emergency medicine residency programs. Our findings suggest learners were overall satisfied with the educational strategies, the timing, and the content of the curriculum.

B. Improving Medical Student Engagement

While educational activities between the Match Day and the medical school graduation have traditionally been administered by medical schools, this curriculum introduces the novel concept of residency programs delivering educational content to their incoming interns prior to the official start of their training. After the Match Day students are more likely to be engaged in content that focuses on specialty-specific knowledge and skills, consistent with their beliefs that the primary purpose of the fourth year of medical school is for career preparation and development (51,69). As such, during this transitional period, it may be more impactful to have residency educators provide curricular content that is traditionally under the purview of undergraduate medical educators. Having spent the last several months prior to the Match Day on specialty-specific sub-internship rotations and specialty-specific interviews, students may experience a shift in their professional identity away from that of the undifferentiated medical student into a future specialty-specific resident. Medical schools have attempted to address the apathy expressed by fourth year medical students through initiatives such as time-variable curricula and curricular individualization (70). However, allowing learners to engage in educational activities administered by their future specialty-specific residency programs is an alternative pathway worth considering.

C. Building Future Trust in Residency Leadership

Beyond increasing medical student engagement, a residency-directed pre-residency wellness curriculum increases intern trust in their future residency leadership. Our interviews demonstrate that interns felt comforted by the residency's investment in their personal wellness. Given high levels of emotional stress experienced during the early phases of residency training, future studies should explore whether pre-residency curricula increase interns' willingness to seek well-being support from program leadership.

D. Support for the Curriculum

The symptoms of burnout experienced by our participants during their first several months of training further justify the content of the curriculum. The curriculum was viewed favorably, and most participants found it to be non-intrusive on their time between the Match Day and the commencement of intern orientation. Based on our results, a hidden curriculum currently exists during this time period in medical training, where students receive informal advice to relax, recuperate, and pursue non-educational activities, allowing for emotional decompression from the stressors of medical school before the start of residency training. Our well-being curriculum during this time period works synergistically with this existing hidden curriculum and can be easily implemented without providing significant academic burden to students.

E. Future Considerations

In addition, our evaluation revealed several other noteworthy observations that will be used to modify the curriculum moving forward. From both the group and individual interviews, it is evident that well-being is very personalized, and a curriculum should be flexible enough to allow for individual customization and optimization. The diversity in backgrounds, experiences, and personal values among incoming interns illustrates the need to expand beyond a one-size-

fits-all well-being curriculum. Activities related to mindfulness and reflective writing were deeply polarizing, and even concepts like personal finance that were widely regarded as beneficial, were not as applicable to some participants who had knowledge on the matter from prior careers or educational experiences.

Independent of curricular content, participants appreciated when they were given recommendations that were specific and actionable. They particularly found advice valuable when it was given by physicians from within their own institutions. The credibility with which a learner judges the recommendations they receive is complex and multifactorial (71). In general, interns view their senior residents and faculty as role models, with a combination of awe and respect. They understand that these physicians were once in their position, and thus place higher value on their recommendations.

The concepts of connectedness and socialization with various support networks was vital in the promotion of intern well-being. As stated, interns looked to their senior residents and faculty as role models, and placed high value in the recommendations received by these individuals. Interns used socialization among their co-residents to help process their clinical experiences and to help cope with the range of emotions they encountered. Equally important were the social networks interns utilized through their families and friends outside of the medical profession. These individuals helped interns establish work-life balance and allowed them to distance their minds from the often all-consuming demands of clinical medicine.

Applying the above concepts, a future pre-residency well-being preparedness curriculum should focus on individualization of content by offering varied and flexible content, actionable recommendations, content derived locally from senior residents and faculty, and should emphasize the importance of establishing and maintaining social support networks.

In addition, based on our analysis it is reasonable to expand the goals of our curriculum. Most wellness and burnout prevention interventions have demonstrated limited effectiveness (26,72-76), and while our curriculum was not aimed at reducing burnout, our post-curricular interviews demonstrated that interns still experienced a wide range of negative emotions, from stress, to physical and emotional exhaustion, to feelings of imposterism, dehumanization of patients, and cynicism. It may be impossible to remove all of the negative stressors associated with residency training and clinical care, and curricular content aimed at fostering resilience should be explored.

"Resilience is the capacity to respond to stress in a healthy way such that goals are achieved at minimal psychological and physical cost (77)." If the nature of residency training and the practice of clinical medicine is such that certain stressors and negative associated emotional experiences are unavoidable, training incoming interns in resilience may be of immense value to their long term well-being and psychological health.

F. Limitations

While burnout is pervasive across graduate medical education (10), this study is limited by its focus on the specialty of emergency medicine. Curricular content was curated by study authors DD, MS, JR, AJ, however there are a multitude of self-help resources available and it is possible that certain resources would have been received differently by participants. In addition, depending on when participants completed the curriculum there was the potential for a several week period before the group interviews, and it is possible that their recall bias and in-person orientation activities confounded their responses. Further, the one-on-one interviews conducted six-months post-curriculum were limited by participant recall bias of curriculum details. We did not track how many students completed the assignments, nor their level of effort within the

curriculum and were therefore unable to assess any differences in participant responses based on their completion of various elements of the curriculum or their overall engagement with the curriculum. Future studies could use the numerous validated scoring tools to assess for reduction in burnout or improvement in well-being among participants, as we did not believe these measurements were in line with the goals of our curriculum. Finally, since burnout is already prevalent among medical students (10), perhaps curricular intervention is needed at an earlier stage in training (e.g. prior to matriculation into medical school).

G. Conclusions

This study demonstrates the feasibility in implementing an asynchronous, long-distance well-being preparedness curriculum targeting incoming interns, administered by residency educators. Overall, learners were satisfied with the content, timing, and educational strategies of the curriculum. Given the negative stressors experienced early on in residency training, curricula aimed at physician well-being are warranted. Providing curricula during this time period may be more effective at engaging apathetic senior medical students, and establishing trust between incoming interns and residency leadership.

Curricula should be flexible to allow for individualization of content with actionable recommendations provided by local senior residents and faculty members. Particular emphasis should be placed on the need to establish various support networks for socialization and processing of emotions and clinical experiences.

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APPENDIX

Pre-Residency Well-Being Preparedness Curriculum

Pre-Residency Well-Being Preparedness Curriculum 2019

Welcome! As you get ready to start what is surely a very challenging (and rewarding!) step in your medical career, this course is designed to give you an overview of some of the major areas that can impact wellness (and later, contribute to burnout) in emergency medicine as well as some skills to help. Obviously, this is meant to be a high-level view of these topics but we specifically focused on issues that have been identified by past residents at LAC+USC. We hope you enjoy the course, its meant to be fun, relevant and really shouldnt take too much of your time. In the end, our goal is that this will help you start residency on the right foot and build some habits that can help carry you through the more difficult challenges that will inevitably come up.

The course has about 10 days of stuff to listen to / read / do and write (in your fancy notebook!), but feel free to complete it at whatever pace you prefer. There are also some optional deeper-dive videos & podcasts under *Learn More*. Note that everything you write in your notebook is completely confidential, you will not be required to share it but we will be talking about the course and some of the topics when you arrive. There is no "grading" for the course, all we ask is for your participation. Please hold onto your notebooks as they will be used later in residency too.

This document is unique to you, in order to help us evaluate the course, please do your best to check the boxes for assignments "in real-time" as you complete them (this data will be anonymized).

When you're ready to get going, please start with the *pre-course survey* linked below. Feel free to reach out to us with any issues / questions / comments. We look forward to meeting you all very soon!

❑ **First: Take pre-course survey**

❑ **Download the Headspace app** (signup is free)

	Listen	*Read*	*Do*	*Write (see table below)*	*Learn More* (optional)
Day 1	❑ EM Cases #103. Part I (23:14)		❑ Headspace Basics #1	❑ Day 1 Writing Exercise	
Day 2		❑ NW: Building a Budget	❑ Headspace Basics #2	❑ Day 2 Writing Exercise	
Day 3	❑ EM Cases #103. Part II (19:49)		❑ Headspace Basics #3	❑ Day 3 Writing Exercise	🎧 AAEM/RSA Podcast - Imposter Phenomenon
Day 4		❑ MD In the Black: Debt	❑ Headspace Basics #4		
Day 5	❑ EM Cases #103. Part III (10:02)		❑ Headspace Basics #5	❑ Day 5 Writing Exercise	📺 TED Talk - Work/Life Balance
Day 6		❑ MD in the Black: Investing	❑ Headspace Basics #6		
Day 7	❑ EM Cases #103. Part IV (14:10)		❑ Headspace Basics #7	❑ Day 7 Writing Exercise	📺 TED Talk - Grit
Day 8		❑ MD in the Black: Disability Insurance	❑ Headspace Basics #8	❑ Day 8 Writing Exercise	
Day 9	❑ EM Cases #103. Part V (12:34)		❑ Headspace Basics #9	❑ Day 9 Writing Exercise	📺 TED Talk - Growth Mindset
Day 10		❑ EM Cases (podcast summary)	❑ Headspace Basics #10	❑ Day 10 Writing Exercise	🎧 Ologies Podcast - Sleep

Day 1 Writing Exercise	Write down 3 positive things that went well in the last 24 hours. These three things can be big or small in importance. Next to each positive event, write about one of the following… Why did this good thing happen? What does this mean to me? How can I have similar experiences in the future?
Day 2 Writing Exercise	What are you most excited about with starting residency? Why? What is your biggest fear? Why?
Day 3 Writing Exercise	Describe an experience you have had dealing with a medical error. Reflect on how you were affected by the event both at the time and now looking back. Is there anything you would do differently?
Day 5 Writing Exercise	Make a list of at least 5 aspects of your life outside of work that you want to maintain or grow udring residency. This can be a relationship, a hobby - anything that is important to you.
Day 7 Writing Exercise	Write down 3 positive things that went well in the last 24 hours. These three things can be big or small in importance. Next to each positive event, write about one of the following… Why did this good thing happen? What does this mean to me? How can I have similar experiences in the future?
Day 8 Writing Exercise	Think about a time when you dealth with an emotionally challenging situation at work with particular skill. Reflect on how your compassion for a patient or colleague made a difference in their life. What personal attributes enabled you to manage the situation well?
Day 9 Writing Exercise	Write your individual mission statement. What do you stand for?
Day 10 Writing Exercise	When you graduate from residency what will you be most proud of? Imagine what a member of your family or friend or person from your workplace might say about your time during residency.

VITA

NAME:	David Samuel Diller
EDUCATION:	B.S., Biology, Cornell University, Ithaca, New York, 2006
	M.D., University of Vermont College of Medicine, Burlington, Vermont, 2011
	M.H.P.E., University of Illinois at Chicago, Chicago, Illinois, 2021
POST-GRADUATE TRAINING:	Residency, Emergency Medicine, Mt. Sinai School of Medicine, St. Luke's Roosevelt Hospital Center, New York, New York, 2014
	Fellowship, Medical Education, Oregon Health and Science University, Portland, Oregon, 2016
	Human Investigators Program in Clinical Research, Oregon Health and Science University, Portland, Oregon, 2016
	Education Scholars Program, Oregon Health and Science University, Portland, Oregon, 2016
	Teaching Fellowship, American College of Emergency Physicians, Irving, Texas, 2016
ACADEMIC APPOINTMENTS:	Clinical Instructor, Emergency Medicine, Oregon Health and Science University, Portland, Oregon, 2014-2016
	Assistant Professor, Emergency Medicine, University of Southern California, Los Angeles, California, 2016-2021
ADMINISTRATIVE APPOINTMENTS:	Chief Resident, St. Luke's Roosevelt Hospital Center, New York, New York, 2014
	Assistant Program Director, Los Angeles County / University of Southern California Emergency Medicine Residency Program, Los Angeles, California, 2016-2019
	Fellowship Director, Los Angeles County / University of Southern California Emergency Department, Los Angeles, California, 2017-2021
	Associate Program Director, Los Angeles County / University of Southern California Emergency Medicine Residency Program, Los Angeles, California, 2019-2021
HONORS:	Wellness Award, University of Vermont College of Medicine, Burlington, Vermont, 2009

Award for Excellence, Group on Institutional Advancement, American Association of Medical Colleges, Washington, DC, 2009

Medical Student Professionalism and Service Award, American College of Emergency Physicians, Irving, Texas, 2010

Medical Student Excellence in Emergency Medicine Award, Society of Academic Emergency Medicine, Des Plaines, Illinois, 2011

Senior Resident Excellence Award, St. Luke's Roosevelt Hospital Center, New York, New York, 2014

Certificate of Merit, Portland Fire and Rescue, Portland, Oregon, 2015

Top Reviewer, Journal of Graduate Medical Education, 2016-2018

Winner, Clinical Pathologic Case Competition National Semi-Finals, Council of Residency Directors Annual Assembly, Fort Lauderdale, Florida, 2017

Runner-Up, Clinical Pathologic Case Competition National Finals, American College of Emergency Physicians, Washington, DC, 2017

Fellow, American College of Emergency Physicians, Denver, Colorado, 2019

PROFESSIONAL MEMBERSHIP:

American College of Emergency Physicians
Council of Residency Directors in Emergency Medicine

ABSTRACTS:

Carney J, Barhoum D, Conant J, Diller D, Hori M, Moore H, Richard K, Tisher A, Robinson C, Delaney T, Wilcke B. Impact of paid sick days on public health in an elementary school population. Presented at the 137th APHA Annual Meeting, 2009.

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Diller D, Cooper S, Jain A, Nok Lam C, Riddell J. Which emergency medicine milestone sub-competencies are identified through workplace-based narrative assessments? University of Illinois – Chicago Master in Health Professions Education Conference, 2019.

Fredericks A, Stern , Riddell J, Diller D, Shamoon M, Jain A. An Asynchronous Flexible Elective for Emergency Medicine-Bound Senior Medical Students. Presented at the 18th Annual Innovations in Medical Education Conference, 2020.

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Miller S, Jain A, Riddell J, Diller D. Building a Novel "Resident as Teacher" Curriculum at an Urban Emergency Medicine Residency Program. Presented at 18th Annual Innovations in Medical Education Conference, 2021.

Messina M, Riddell J, Jain A, Diller D. Piloting Observable Professional Activities in the Assessment of Emergency Medicine Trainees. Presented at 18th Annual Innovations in Medical Education Conference, 2021.

PUBLICATIONS:

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