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Benchmarking Critical Care Well-Being: Before and After the Coronavirus Disease 2019 Pandemic

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Objectives: Examine well-being, measured as burnout and professional fulfillment, across critical care healthcare professionals, ICUs, and hospitals within a health system; examine the impact of the coronavirus disease 2019 pandemic.

Design: To complement a longitudinal survey administered to medical critical care physicians at the end of an ICU rotation, which began in May 2018, we conducted a cross-sectional survey among critical care professionals across four hospitals in December 2018 to January 2019. We report the results of the cross-sectional survey and, to examine the impact of the coronavirus disease 2019 pandemic, the longitudinal survey results from July 2019 to May 2020.

Setting: Academic medical center.

Subjects: Four-hundred eighty-one critical care professionals, including 353 critical care nurses, 58 advanced practice providers, 57 physicians, and 13 pharmacists, participated in the cross-sectional survey; 15 medical critical care physicians participated in the longitudinal survey through the coronavirus disease 2019 pandemic.

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Interventions: None.

Measurements and Main Results: Burnout was present in 50% of ICU clinicians, ranging from 42% for critical care physicians to 55% for advanced practice providers. Professional fulfillment was less common at 37%, with significant variability across provider ($p = 0.04$), with a low of 23% among critical care pharmacists and a high of 53% among physicians. Well-being varied significantly at the hospital and ICU level. Workload and job demand were identified as drivers of burnout and meaning in work, culture and values of work community, control and flexibility, and social support and community at work were each identified as drivers of well-being. Between July 2019 and March 2020, burnout and professional fulfillment were present in 35% (15/43) and 58% (25/43) of medical critical care physician responses, respectively. In comparison, during the coronavirus disease 2019 pandemic, burnout and professional fulfillment were present in 57% (12/21) and 38% (8/21), respectively.

Conclusions: Burnout was common across roles, yet differed across ICUs and hospitals. Professional fulfillment varied by provider role. We identified potentially modifiable factors related to clinician well-being that can inform organizational strategies at the ICU and hospital level. Longitudinal studies, designed to assess the long-term impact of the coronavirus disease 2019 pandemic on the well-being of the critical care workforce, are urgently needed.

Key Words: advanced practice providers; burnout, professional fulfillment, well-being, critical care; nurses; pharmacists; physicians

Burnout, defined as a psychological syndrome related to job stressors, has reached epidemic levels among healthcare professionals (1). Burnout syndrome, characterized by emotional exhaustion, depersonalization, and reduced sense of effectiveness and personal accomplishment, is common among critical care nurses and physicians (2, 3). Specifically, 33% of intensive care nurses (4) and 46% of ICU physicians experience

severe burnout syndrome (5). Burnout has been linked to provider anxiety and depression (6), patient safety events, reduced quality of care for patients, and diminished patient satisfaction (7–9). Burnout extends to non-physician, non-nurse healthcare roles outside of the critical care environment (10–13); yet, information regarding burnout rates in critical care clinicians other than physicians or nurses is lacking (2).

To mitigate the development of burnout and to promote wellness among critical care healthcare professionals, the Critical Care Societies Collaborative developed a “Call to Action” in 2016 (2). The “Call to Action” recommends that measures of well-being “should be benchmarked and compared across ICUs and medical centers” (2). Likewise, the National of Academy of Medicine’s (NAM) Action Collaborative on Clinician Well-Being and Resilience recommends that to improve clinician well-being, institutions need to “measure it, develop and implement interventions, and then re-measure it” (14).

To date, it remains largely unknown whether well-being differs by professional role or across ICUs or hospitals. In fact, few studies have benchmarked well-being and those conducted have focused on burnout. We therefore designed a mixed-methods study to measure well-being, defined as burnout and professional fulfillment (15), across the multidisciplinary team, ICUs, and hospitals of one health system. By including professional fulfillment, as originally designed (15), we sought to capture the positive and negative aspects of the role and work of critical care professionals to provide a balanced assessment. As secondary objectives, we sought to better understand what drives critical care healthcare professional well-being and to examine the impact of the coronavirus disease 2019 (COVID-19) pandemic on well-being.

MATERIALS AND METHODS

Study Design

In May 2018, we began a longitudinal, well-being assessment within the Section of Medical Critical Care (16). Consistent with the NAM recommendations (14), we designed a Research Electronic Data Capture (REDCap) survey to measure well-being among medical critical care attending physicians at the end of an ICU rotation (16, 17). As detailed in Mikkelsen et al (16), we identified a problem, implemented a solution (i.e., shorten ICU rotations from 14- to 7-d rotations), and remeasured well-being and found that well-being improved as a result. We have continued these longitudinal well-being assessments to ensure improvements were sustained.

In the fall of 2018, we scaled our program up to the health system level. We redesigned our previously used REDCap survey (16, 17) to measure critical care healthcare professional well-being among clinicians practicing in one of 16 ICUs across four hospitals at Penn Medicine. We included physicians, nurses, advanced practice providers (APPs), and pharmacists who practice in the ICU setting. The Institutional Review Board approved the project as a quality improvement initiative (Project number 834553).

The automated REDCap survey was sent to each practicing critical care clinician via email, beginning in December 2018, with up to three reminders over 2 months. As such, the cross-sectional health system survey was completed prior to the COVID-19

pandemic. The survey contained a request for demographic information including clinical role, number of years in practice, primary department and annual ICU service time for physicians, and ICU type and hospital affiliations. For clinicians who provide care in multiple ICUs and/or hospitals, their information could be assigned to multiple areas.

Well-Being Measures

To examine well-being, we included two recommended (14), validated instruments in the survey: the Stanford Professional Fulfillment Index (SPFI) (15) and the Well-Being Index (WBI) (18, 19). Consistent with prior work (16), we used the expanded, 9-item WBI, which includes two additional questions, as this approach has been shown to more fully capture well-being by including assessments of work-life integration and meaning in work (19).

The SPFI uses 6 and 10 items to measure professional fulfillment and burnout, respectively, within the last 2 weeks (15). Professional fulfillment-related items assess the “degree of intrinsic positive reward the individual derives from his or her work, including happiness, meaningfulness, contribution, self-worth, satisfaction, and feeling in control when dealing with difficult problems at work” (15). In the SPFI, professional fulfillment is defined as an average fulfillment score of greater than or equal to 3; burnout is defined as an average burnout score of greater than or equal to 1.33. The WBI uses 7 items to measure burnout within the last 4 weeks, with burnout defined as a WBI score of greater than or equal to 4 (18). If a participant met either SPFI or WBI criteria for burnout, they were considered to have burnout.

Drivers of Burnout, Sources of Wellness, and the Impact of the COVID-19 Pandemic

Within the survey, we also examined candidate risk factors for wellness. Derived from work by Shanafelt and Noseworthy (20), we asked critical care professionals to rate seven possible drivers of burnout on a range of 0 (“this is driving my sense of burnout”) to 100 (“this is a source of my well-being”). The seven possible drivers included: workload and job demands, efficiency and resources, meaning in work, culture and values of work community, control and flexibility, social support and community at work, and work-life integration (20). Respondents were invited to provide comments after each question.

As noted previously, the cross-sectional survey was designed to parallel our longitudinal survey conducted within the Section of Medical Critical Care (16). Therein, intensivist well-being is measured at the end of a clinical rotation (e.g., day 7 of a 7-d rotation) among three ICUs at two hospitals. We continued these longitudinal surveys through the pandemic. We hypothesized that burnout would increase during this time period. To enhance our ability to benchmark critical care well-being, we report the rates of burnout and professional fulfillment in the academic year, beginning July 2019 to February 2020 (pre-pandemic), and then from March 2020 to May 2020 (during the pandemic), to coincide with the onset, peak, and plateau of the pandemic in Philadelphia. To obtain a more accurate assessment of the impact of the pandemic, we limited these analyses to the 15 medical critical care physicians who provided well-being assessments in both time periods.

Statistical Analysis

We present the rates of burnout and professional fulfillment as counts and proportions. We compared rates of burnout and professional fulfillment across providers, hospitals, and ICUs using the Fisher exact test or chi-square test, as indicated. We used the Kruskal-Wallis test to examine differences in work experience across clinical roles. We tested for associations between candidate risk factors and burnout using the Wilcoxon rank-sum test. We used Stata 13.0 IC for analyses (Stata Datacorp, College Station, TX), and considered p values of less than or equal to 0.05 as statistically significant.

To provide context to the identified factors associated with burnout and well-being, we compiled and summarized the free-text response entries for assigned scores of less than or equal to 20 (i.e., drivers of burnout) or greater than or equal to 80 (i.e., source of well-being), respectively. We selected these thresholds to identify salient, representative comments. Two independent investigators (S.G., M.E.M.) reviewed the qualitative data to identify themes and examples within each driver of well-being and to select illustrative quotes by consensus.

RESULTS

Study Participants

Of 1,060 critical care healthcare professionals contacted, 481 (45%) completed the survey in December 2018 and January 2019. The 481 healthcare professionals included: 353 critical care nurses, 58 APPs, 57 physicians, and 13 pharmacists. Survey participation varied by clinical role, ranging from 68% for critical care pharmacists (13/19); 61% for physicians (57/94); 61% for APPs (58/95), to 41% critical care nurses (353/852). The median years in practice, among respondents, was 8 years, with an interquartile range (IQR) of 4–13 years. As presented in **Table 1**, clinical experience varied by clinical role ($p = 0.007$), as critical care physicians and nurses had been in practice for more years than pharmacist and APP respondents.

Critical Care Healthcare Professional Well-Being

Of the 481 critical care healthcare professionals surveyed, burnout and professional fulfillment were present in 239 (50%) and 179 (37%), respectively (Table 1). In general, survey respondents perceived their work to be meaningful, with a median score of 6 out of 7 (IQR, 6–7), with 7 being “very strongly agree.” Further,

TABLE 1. Well-Being Among Critical Care Healthcare Professionals

Provider	Years in Practice	Burnout, %	Fulfillment, %
Advanced practice provider ($n = 58$)	5 (3–10)	55	29
Nurse ($n = 353$)	8 (5–15)	50	36
Critical care pharmacist ($n = 13$)	6 (4–7)	46	23
Physician ($n = 57$)	9 (4–14)	42	53
Overall ($n = 481$)	8 (4–13)	50	37

respondents agreed that their work schedules leave enough time for personal and family life, with a median score of 4 out of 5 (IQR, 3–4), with 5 being “strongly agree.”

As reported in Table 1, we found that burnout was common in all healthcare professionals. Burnout was most common among APPs, at 55%, and least common among physicians, at 42%. Burnout rates did not differ across clinical types ($p = 0.55$), nor among physicians by department ($p = 0.32$). The rate of burnout was similar by APP type, being present in seven of 13 (54%) physician assistants and 25 of 45 (56%) nurse practitioners ($p = 0.91$). Burnout was associated with clinical experience (median of 7 yr in practice among those with burnout, IQR: 4–11, compared with 9 yr, IQR: 4–17 among those not experiencing burnout; $p = 0.03$).

In contrast to burnout, which was similar across clinical role, professional fulfillment differed by clinical role ($p = 0.04$). Professional fulfillment was highest among physicians (53%) and lowest among critical care pharmacists (23%). There was no relationship between years of clinical experience and professional fulfillment, as those who were fulfilled were in practice a median of 8 years, the same as those who were not fulfilled ($p = 0.13$). As reported in **Tables 2** and **3**, burnout and professional fulfillment differed across hospitals and ICUs, respectively. As reported in **Supplemental Table 1** (<http://links.lww.com/CCX/A371>), burnout rates within hospitals varied by provider type. For example, at hospital A, with an aggregate burnout rate of 54%, burnout rates ranged from 43% for physicians to 68% for APPs; years in practice varied by provider type, suggesting clinical experience may explain, in part, the observed differences, within hospital A.

Drivers of Burnout, Sources of Wellness, and the COVID-19 Pandemic

As shown in **Table 4**, compared with those not experiencing burnout, those experiencing burnout scored each potential risk factor lower ($p < 0.001$). Among those with burnout, the strongest driver of burnout was related to workload and job demands. Conversely, meaning in work, social support and community at work, and culture and values of my work community appeared to be protective of developing burnout as sources of well-being.

In **Table 5**, as context for the identified drivers of burnout and sources of well-being, we provide illustrative quotes from free-text responses. The free-text responses provide specific examples for how workload and job demands, inefficiency and lack of resources, lack of meaning in work, cultures and values, lack of control and

TABLE 2. Well-Being by Hospital, Listed by Hospital Size

Hospital	Licensed Beds	Burnout, %	Fulfillment, %
A ($n = 294$)	791	54	35
B ($n = 156$)	375	42	50
C ($n = 42$)	496	50	21
D ($n = 26$)	256	31	38

Sum of participants exceeds 481 as some healthcare professionals surveyed (e.g., attending physicians) practice at more than one hospital within the health system.

TABLE 3. Well-Being by ICU, Stratified by Hospital

Hospital	ICU	ICU Type	Burnout, %	Fulfillment, %
A	1 (n = 114)	Heart and vascular	59	32
	2 (n = 71)	Medical	58	38
	3 (n = 94)	Medical	56	38
	4 (n = 72)	Surgical	50	43
	5 (n = 51)	Neurologic	49	33
	6 (n = 33)	Cardiac care	33	51
	7 (n = 20)	Emergency department-ICU	30	50
B	1 (n = 59)	Trauma and surgery	41	47
	2 (n = 64)	Heart and vascular	41	55
	3 (n = 33)	Neurologic	33	45
	4 (n = 36)	Medical	28	58
C	1 (n = 17)	Medical/surgical	47	24
	2 (n = 18)	Medical/surgical	44	17
	3 (n = 21)	Medical/surgical	38	29
	4 (n = 9)	Intermediate care	33	22
D	1 (n = 26)	Medical/surgical	31	38

flexibility, loss of social support and community at work, and lack of work-life integration drive burnout. Likewise, responses provide specific examples for how meaning in work, control and flexibility, social support and community at work, and work-life integration promote well-being.

Between July 2019 and March 1, 2020, burnout and professional fulfillment were present in 35% (15/43) and 58% (25/43) of medical critical care physician responses, respectively. In comparison, during the COVID-19 pandemic, burnout and professional fulfillment were present in 57% (12/21) and 38% (8/21), respectively.

DISCUSSION

In the cross-sectional portion of this study, we benchmarked well-being across the multidisciplinary critical care team, ICUs, and four hospitals within a healthcare system. Consistent with prior studies (4, 5), we confirmed that burnout was common among critical care physicians and nurses. To our knowledge, for the first time, we found that burnout is also common among critical care APPs and critical care pharmacists and our longitudinal well-being surveys suggested that burnout increased during the COVID-19 pandemic. Collectively, these results reveal that burnout is a threat to the entire multidisciplinary critical care team and serial assessments are urgently needed to assess the long-term impact of the COVID-19 pandemic on the well-being of the critical care workforce.

Consistent with prior work (12, 21), we found that clinicians with less years of work experience were more likely to suffer from

TABLE 4. Drivers of Critical Care Healthcare Professional Well-Being

Risk Factor	Median Score in Those With Burnout (IQR)	Median Score in Those Without Burnout (IQR)	p
Workload and job demands	27 (16–38)	50 (29–72)	< 0.001
Efficiency and resources	50 (27–68)	61 (41–79)	< 0.001
Meaning in work	70 (50–80)	77 (66–90)	< 0.001
Culture and values of my work community	50 (33–73)	73 (56–84)	< 0.001
Control and flexibility	50 (30–74)	71 (50–86)	< 0.001
Social support and community at work	64 (50–78)	75 (59–90)	< 0.001
Work-life integration	50 (27–68)	66 (50–80)	< 0.001

IQR = interquartile range.

Participants scored each factor on a scale ranging from 0 ("this is driving my sense of burnout") to 100 ("this is a source of my well-being"). Results are presented according to burnout status.

burnout. This finding appeared to partly explain the higher rates of burnout at one hospital. Serial well-being assessments, targeted to provider types experiencing high rates of burnout and early-to-practice providers, specifically, appear warranted. Additional characteristics associated with burnout, drawn from existing literature, include: age, female gender, perfectionism, conflicts in interprofessional relationships, high frequency of end-of-life care, and sleep disruption (2–4). Through a mixed-methods approach, we confirmed and elucidated how workload and job demands, inefficiency and lack of resources, lack of meaning in work, cultures and values, lack of control and flexibility, loss of social support and community at work, and lack of work-life integration drive clinician burnout in the critical care environment.

While each is important, we found the strongest driver of burnout related to workload and job demands. This finding substantiates the relationship between burnout and increased workload among physicians (2, 5, 12, 16) and lack of control over shift scheduling among nurses (4). Physicians experience increased rates of burnout when working more night shifts per week or consecutive working days (5, 16). Related, our prior work suggests an ebb and flow to burnout exists among critical care physicians, with burnout subsiding to more modest levels when not attending in the ICU and when ICU rotations were shortened from 14 to 7 consecutive days (16). These observations can be used to inform organizational strategies to reduce burnout, ranging from flexible scheduling to encouraging paid time off from work to re-charge. Future work is also required to understand how well-being changes over time among critical care physicians employed in private practice and among non-physician critical care professionals (e.g., APPs, pharmacists), given that job responsibilities for these individuals are often largely or completely clinical. To help critical care providers cope with the demands of the job, especially those early-to-practice, organizations should consider offering

TABLE 5. Illustrative Quotes From Free-Text Responses for Burnout Risk Factors

Risk Factor	Score	Role	Quotes
Workload and job demands	2	Nurse	The number of expectations continues to increase for us while the outlets of support do not grow in correlation.
	10	APP	Often the middle man between surgeon, anesthesiologist, bedside nurse, and consult services. Pulled in multiple directions. Typically the scapegoat when things go poorly with patients but not much gratitude or recognition when things go well.
	16	Attending physician	I have way too much to do—papers, chapters, grants, research data to analyze, papers to edit, society work, I feel overwhelmed and frankly underappreciated for all that I do.
	80	Nurse	My job demands and workload keep me engaged and challenged.
Efficiency and resources	5	Nurse	[The electronic health record] is poorly designed, taking more time than necessary to document and taking the care giver away from the bedside. Unhelpful/disgruntled ancillary staff ([certified nursing assistants]), and lack of resources/support services (no supplies, trash piling up/sharps container, etc).
	17	Pharmacist	Drives burnout: inability to prioritize given excessive and competing responsibilities. This then compromises personal efficiency. Given lack of resources we are unable to support the other pharmacy staff in expanding their clinical knowledge which then further contributes to our increased workload...reduced institutional efficiency [due to] multiple processes and approvals that are required.
	18	Nurse	Supply closets are inconsistently stocked, equipment is often broken or missing key components, communication tools aren't used or updated by all staff. My time is frequently spent [on] menial tasks...rather than spent on meaningful patient care.
	81	Nurse	I came from a high acuity, busy ICU at another hospital with a quarter of the resources and efficiency. I can say without a doubt I'm so much happier at this job because all I need to do is take good care of my patients. I'm not also expected to be the secretary, CNA, and unit support person.
Meaning in work	13	Nurse	Bedside nurses are often treated with disrespect by physicians from other services. They...leave trash, gauze packs and dirty dressings on the floor for nurses to clean up. They often do not communicate treatment plans...this makes nurses feel meaningless.
	17	Attending physician	Caring for patients with advanced illness and only a small chance of getting better drives burnout.
	86	Attending physician	The main reason I choose to work here is meaningfulness of the work. Clinical care is one aspect, but research and teaching are also what contribute to that feeling.
	95	Nurse	I enjoy what I do, and I feel like I make a difference, and appreciate when families thank me for my 'job well done.'
Culture and values of my work community	3	Attending physician	The culture at work is always to do more, more, more at work. The pressure in this area is tremendous.
	20	APP	Leadership seems distracted and not in tune with colleagues...Although leadership may ask my opinion or the opinion of the group, they will proceed as they see fit...Also, I don't feel recognized as a provider and I know that I'm just another warm body and completely replaceable.
	92	APP	I love the people I work with ... The nursing staff, pharmacy staff and all other ancillary staff is excellent. We make it a team effort, not [an] individual effort.
	98	Nurse	It's a nice feeling going home after being able to give your best and make a difference to someone's life. There is sense of fulfillment and meaning especially if you love what you do. We are such one family in the ..., helping each other to take care of the patients.
Control and flexibility	1	Nurse	Scheduling has been a big factor for me. Working nights, weekends, and holidays particularly cause me to seek other jobs/lifestyles. It is reason alone that I have recently started a new job outside of the ICU.
	15	Attending physician	There isn't much flexibility in critical care. It's a long day and week where you don't see your family or have time to pay attention to your other responsibilities.
	89	Nurse	Because of self-scheduling, it is nice to be able to create a schedule that works around life but 12 hour shifts are studied to be ineffective to manage work-life balance.

(Continued)

TABLE 5. (Continued). Illustrative Quotes From Free-Text Responses for Burnout Risk Factors

Risk Factor	Score	Role	Quotes
Social support and community at work	18	Pharmacist	A sense of community has been lost. Teams are fractured...It is not motivating to work in such an environment.
	92	APP	Having a strong team environment leads to feeling supported.
	100	Nurse	I work with kind and amazing women and men. I feel well-supported by my co-workers and managers.
Work-life integration	0	Nurse	Dayshift/nightshift flipping absolutely affects my well-being...It affects my mental health and increasing feeling down and feeling anxious.
	10	Nurse	Short staffing leaves you so mentally and physically exhausted you have no interest in doing anything on your day off.
	99	Nurse	Provides support to me and my family. Being able to know that if things happen unexpectedly, I have the support of my work to take days off [if] needed, not to be so stressed on trying to juggle family and work.

APP = advanced practice provider.

Participants scored each factor on a scale ranging from 0 ("this is driving my sense of burnout") to 100 ("this is a source of my well-being").

resilience training. These programs, which may include professional coaching and mindfulness training, have proven effective in improving mental health and quality of life among ICU nurses and physicians (22, 23).

Conversely, meaning in work, social support and community at work, and culture and values of the work community were identified as sources of well-being that can be used to inform organizational strategies to enhance wellness. Our findings, thereby, substantiate the theory that enhancing meaning in work is a recommended strategy to prevent burnout (24). While burnout was common across providers; unfortunately, professional fulfillment differed significantly across providers. In fact, professional fulfillment was less common than burnout among nurses, APPs, and critical care pharmacists. Given the untoward effects of burnout on clinician health, including compassion fatigue, job turnover, and patient satisfaction and quality of care (2), these findings warrant confirmation and further study.

Beyond the clinician, at the organizational level, we found that burnout and professional fulfillment varied at the ICU and hospital level. The variations observed suggest that unit and hospital factors likely contribute to burnout. In the next phase of our well-being initiative, we will conduct multidisciplinary focus groups to elucidate drivers of burnout and professional fulfillment in specific units with high rates of burnout and/or professional fulfillment. In parallel, we acquired a greater understanding of drivers of burnout and sources of wellness to inform the design of interventions to optimize well-being and promote resilience at the clinician, unit, and hospital level.

Specifically, areas to focus on at the ICU and hospital level include managing workload (e.g., schedule), optimizing efficiency (e.g., electronic health record) and aligning resources (e.g., staffing) with the workload, and promoting culture and values at work that foster recognition, collegiality, teamwork, and a sense of community. Given the known relationship between organizational leadership and clinician burnout (25) and our findings that well-being differed across ICUs and hospitals, attention is also required in regards to the selection and training of unit- and hospital-based leadership who interface with critical care professionals.

Additional organizational strategies to combat burnout include: team building, communication training, and structured communication during interprofessional rounds to enhance working relationships and reduce conflict; control and flexibility in scheduling; engagement in nonclinical professional activities (e.g., quality improvement, research) (4, 26); and creating a culture where clinicians are encouraged to take time off in the spirit of work-life integration (3).

As our study was conducted in a single, academic health system, confirmatory studies are warranted. Based on our longitudinal study of medical critical care physicians, we recognize the need to re-measure well-being across the complete spectrum of healthcare professionals, especially in light of the pandemic, and have prepared to do so. In this initial quality improvement focused assessment, we did not capture sociodemographics (e.g., age, gender) known to associate with burnout. While we did not include respiratory therapists in this initial survey, we will in subsequent surveys. We acknowledge a small sample size to assess the impact of COVID-19 and acknowledge a low response rate among nurses; however, the response rate (27) and observed rate of burnout were similar (4) to prior studies. Regardless, to augment our response rate, we intend to include personal as well as professional emails when contacting eligible participants in subsequent surveys. Last, although we included free-text responses to inform our well-being assessment, we acknowledge the importance of alternative methods (e.g., focus groups) to elucidate critical care well-being. Further, future studies incorporating more robust qualitative analysis techniques (e.g., inductive reasoning) and/or methods (e.g., qualitative software analysis) are warranted.

In conclusion, we benchmarked well-being across critical care healthcare professionals, ICUs, and hospitals. We confirmed that burnout is common among critical care physicians and nurses and expanded our knowledge by finding that burnout is also common among critical care APPs and pharmacists. Of equal relevance, professional fulfillment, common among critical care physicians, was less common among nurses, APPs, and pharmacists. At the organizational level, we found that burnout and professional fulfillment rates differed across ICUs and hospitals. We identified

potentially modifiable factors related to critical care healthcare professional well-being that can inform organizational strategies at the individual, ICU, and hospital level. Our findings support the recommendation that to improve clinician well-being, we need to “measure it, develop and implement interventions, and then re-measure it” (14). Finally, we measured the short-term impact of the COVID-19 pandemic on critical care physician well-being. Longitudinal studies, designed to assess the long-term impact of the COVID-19 pandemic on the well-being of the critical care workforce, are urgently needed.

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