HOUSE

Journal of the University of Washington
Housestaff Quality and Safety Committee

SIXTH EDITION | 2020

UW Medicine
GRADUATE
MEDICAL EDUCATION
HOUSESTAFF QUALITY
& SAFETY COMMITTEE

HOUSE

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In This Issue of HOUSE

Articles

Photo: Clare McLean/UW Medicine

A Note from the Editors

Dear UW Medicine Reader,

We are proud to present the sixth edition of HOUSE, the resident publication of the UW Housestaff Quality and Safety Committee (HQSC). This year has brought many expected and unexpected events including a global pandemic, social unrest, and a presidential election. In spite of all the uncertainty, our housestaff have continued to utilize quality improvement to address these events as they intersect with our healthcare system.

This year, the HQSC has been working on various exciting projects: In May 2020, the HQSC collaborated with NURF (Network for Underrepresented Residents and Fellows) for the third annual Health Equity Quality Improvement Conference. The conference was held virtually and saw its largest number of attendees to date! During the conference, we explored how quality improvement can incorporate health equity principles to aim for a more just and equitable outcome for all patients. The HQSC's commitment to health equity has also led to our involvement in initiatives to improve the care of incarcerated patients along with our colleagues in NURF and the Resident/Fellow Physician Union- Northwest (RFPU-NW). Lastly, we are working on a longitudinal project that aims to reduce surgical delays by improving the preoperative medical clearance process. This project has been a great way to incorporate the interests of our multidisciplinary team.

In this issue, we offer you reflections on the effect of COVID-19 and of systemic racism on our patients, friends, family, and ourselves. We also feature various quality improvement work which exemplifies how UW Housestaff have empowered themselves to make an impact regardless of the unpredictability of the world around us.

We hope that you enjoy this edition of HOUSE 2020 as a display of the remarkable work that our University of Washington residents and fellows do every day. Furthermore, we hope it inspires you to engage in your own quality improvement efforts both big and small.

Sincerely,

Natasha Kwendakwema, MD
Daniel Cho, MD, PhD
HQSC Co-Chairs

Photos: Clare McLean/UW Medicine (top/middle), Lauren Feld (bottom)

Getting Involved in Quality Improvement and Patient Safety

There are many ways for University of Washington residents and fellows to become involved in quality improvement (QI) and patient safety projects.

Housestaff Quality and Safety Committee

Founded in 2011, the UW Housestaff Quality & Safety Committee (HQSC) is a trainee-led organization with members from a range of academic divisions. HQSC functions in partnership with the UW Patient Safety and Quality Coordinating Committee and the Graduate Medical Education Committee, with the goal of engaging members in the quality and safety work pursued throughout UW training sites. Members attend monthly meetings throughout the year to learn the skills needed to become future leaders in QI and patient safety. Recent programmatic focus has been on interdisciplinary work across trainee subspecialties as well as the application of QI to problems in Diversity and Inclusion. Grants are available and distributed biannually to support QI projects and travel to QI conferences. Our Leadership Board continues to serve our members in areas of publication, scholarship, diversity, and error reporting.

HQSC Certificate Program

Motivated HQSC members can earn a certificate in quality improvement and patient safety by consistently attending monthly meetings, completing the Institute for Healthcare Improvement (IHI) Open School online curriculum, and participating in a longitudinal project.

HQSC Project Grants

Residents and fellows with an interest in developing a QI project are welcomed to submit an application for a HQSC Project Grant. Funding of up to $1000 per project grant is available, with greater funding available to projects that address Diversity and Inclusion or span multiple different medical specialties. More information can be found at **https://sites.uw.edu/uwhqsc/grants/**.

SQuIRREL

Initially developed as an HQSC-sponsored quality improvement project aimed at increasing resident involvement in patient safety reporting at UWMC, SQuIRREL has evolved to become a standing HQSC sub-committee. It offers trainees the opportunity to review and prioritize resident-submitted PSN (Patient Safety Network) reports. Working in conjunction with the UWMC Patient Safety Office, SQuIRREL continues to produce meaningful systems change on issues most relevant to residents and fellows.

Medical Error Reporting Systems

Given that housestaff are on the frontlines of healthcare, it is important for residents and fellows to be able to report safety and quality issues. All the major hospitals in the UW system have an error reporting system. UWMC and HMC use the Patient Safety Network (PSN), the VA Puget Sound uses Joint Patient Safety Reports (JPSR), and Seattle Children's Hospital uses eFeedback. Taking a few minutes to report quality and safety issues can add data to existing QI efforts as well as reveal unknown safety concerns.

Morbidity & Mortality Conference

While adopting unique formats in different specialty contexts, a morbidity and mortality review conference is nearly universal across the various subsets of the Graduate Medical Education community. Residents and fellows are often readily included in these conferences, which present a unique opportunity to reflect on medical errors, adverse events, and near misses. Several conferences have adopted built-in process improvement brainstorming, which provides fertile ground for the generation of QI projects.

UW Medicine Event Reviews

Several medical centers within UW Medicine sponsor intensive event reviews for serious or sentinel safety events. The goal is to achieve the best possible understanding of why an event occurred to prevent future errors. These event reviews welcome resident and trainee participation and eagerly encourage their attendance. To volunteer to participate in future event reviews, please email **uwhqsc@uw.edu**.

Leaf Data Retrieval System

Leaf is a self-service clinical data analytical tool that allows clinicians to independently run analyses on various patient populations in the UW system based on multiple different specified criteria. Please see **https://www.iths.org/investigators/services/bmi/leaf/** for more information.

UW Access to Excellence

This dashboard for visualizing current health system performance in quality and safety is available to residents and fellows. Information can be broken down by UW Medicine clinical entity, service line, and various measurement bundles. Metrics can also be reviewed through equity lenses including race, language, and housing status. Access requires AMC login credentials.

UW Patient Safety Innovations Program

The clinicians and researchers at UW Medicine have the insight to develop projects that enhance the quality and safety of patient care at UW Medicine, and those projects need guidance and funding. UW sought to tap this insight and support it, creating the Patient Safety Innovations Program (PSIP). This program provides pilot funding and expert guidance to innovative projects that improve patient safety and quality of care, reduce medical-legal expenses, and strengthen the academic environment around patient safety. For more information, and access to the 2020 Request for Proposals, please visit the PSIP website at **https://patientsafety.uw.edu/patient-safety-innovations-program**.

QI Match

Interested in a project but not sure where to start or who is doing what? Dr. Nicholas Meo is developing a website to match trainees to available QI projects. See **https://qimatch.com/** for more information.

HQSC Members 2019-2020

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UW GME GRADUATE QUALITY & SAFETY CERTIFICATE AWARDEES

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Daniel Cho MD, PhD (PGY-5, Plastic Surgery)

Nikita Baclig, MD, MPH, Chief Resident (Internal Medicine)

Cody Fitzgerald, MD Fellow (Pulmonary and Critical Care)

GENE PETERSON AWARD

Dr. Bryson-Cahn is an assistant professor in the Department of Medicine, Division of Allergy & Infectious Diseases. She serves as the Medical Director of Antimicrobial Stewardship and Associate Medical Director of Infection Prevention at Harborview Medical Center. She also is the Associate Medical Director of the University of Washington Tele-Antimicrobial Stewardship Program (UW TASP). Her involvement in quality improvement is so extensive that every nomination included a different set of projects, including Vancomycin AUC monitoring, outpatient parenteral antibiotic therapy monitoring, OCCAM antibiotic resource kit, improving access to Hepatitis A vaccinations, microbiology review, and QI curriculum development of the ID fellows. This academic year, she volunteered to overhaul the Quality Improvement rotation for the Infectious Disease Fellowship Program, which integrated first year fellows into her daily work of reviewing microbiology, assessing new drugs for the formulary, and drug monitoring. She has also played a critical response in the University of Washington's extremely effective response to COVID-19 including developing policies for testing, contact tracing, treatment, and PPE use. Most importantly, her fellows note that her calm, practical, and knowledgeable attitude and mentorship are an inspiration to all. She is a triple threat in every regard: an excellent physician, excellent scientist, and master instructor with a heart for public health. We are thrilled to award Dr. Bryson-Cahn the Gene Peterson Faculty Award!

This section features exceptional work conducted by the residents and fellows of UW Medicine in the field of quality improvement.

Gratitudology: A Study of Resident-Driven, Standardized Gratitude Practice

Authors: Mark Castera, MD; Sally Peach, MD, PhD; Julie Campbell, MD; Jennifer Moore, MD; Valentine Esposito, MD, MHS; Vivian Chiang, MD; Chelsea Del Rosso, MD; Caroline Hogan, MD; Cora Breuner, MD, MPH, FAAP; Maneesh Batra, MD, MPH

Affiliation: Department of Pediatrics, University of Washington, Seattle, WA

ABSTRACT

Work dissatisfaction and stress amongst medical trainees is a well-known problem. We developed a brief, standardized gratitude practice that trainees could integrate into their workdays. We found that trainees generally enjoyed this practice during a three-month quality improvement cycle and were able to perform the practice at least a few times each week despite several perceived barriers. Next steps could include sharing this practice with other training programs and seeing how to develop a sustainable model.

INTRODUCTION

Physician well-being is an issue which is deservedly receiving increased attention. The current population of established physicians and trainees is plagued by burnout, work dissatisfaction, depression, and rising suicide rates. Many efforts are being made in the wellness sphere, but no best practice has emerged yet. The breakneck pace of modern medicine leaves very little time or space for opportunities to pause and celebrate the good of each day, especially for current trainees. Gratitude practice has been widely proven to promote feelings of well-being. We proposed a three-month quality improvement trial starting in block two of AY 2020-2021 to integrate standardized gratitude practice for our inpatient teams at Seattle Children's Hospital.

METHODS

We provided instructions about how to integrate gratitude practice to morning and evening sign out routines on inpatient pediatric general medicine, pediatric subspecialty, neonatology, and pediatric hematology/oncology teams. We suggested that all outgoing residents, from the day or night shift, briefly mention one thing that they were grateful for having happened during their shift prior to starting their IPASS handoff for patient care. This was intended to take approximately 10 seconds per person and add no more than 1 minute to an average size team's handoff routine. At the end of each service month, trainees were sent a link to a brief feedback survey or could scan a QR code from a poster in their team rooms. This survey asked participants how often they participated in gratitude practice during the past month, how they felt about being asked to participate, and what barriers they felt prevented them from participating.

RESULTS

Between July and October 2020, 98 resident physicians from pediatrics, family medicine, and anesthesiology training programs, medical students, and advanced practice practitioner fellows were invited to participate in this project during their inpatient service blocks at Seattle Children's Hospital. 23 (23%) participants responded to the survey at the end of the block. Most respondents were female (16, 70%), and from the intern class (12, 52%). Respondents reported variable frequencies of completing their gratitude practice during their inpatient month (Figure 1). Many participants had never practiced gratitude formally in the past (16, 70%) but liked the idea of having dedicated time to practice gratitude at work (22, 96%). Most participants noticed more positive things happening each day at work since starting their gratitude practice (21, 91%). Participants identified feeling unable to stick to the practice (13, 57%) and finding excuses not to perform the practice (12, 52%) as their biggest perceived barriers (Figure 2).

Figure 1: Frequency that participants completed gratitude practice

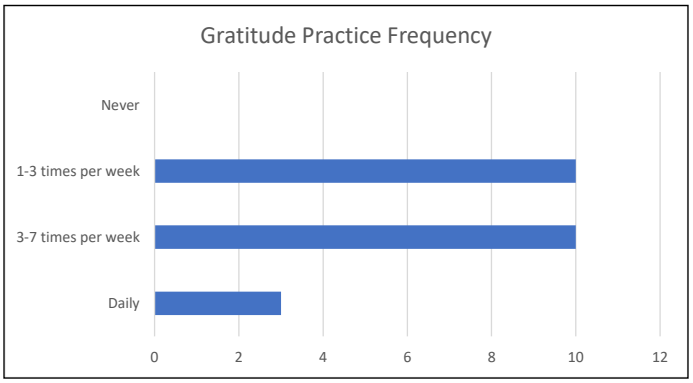
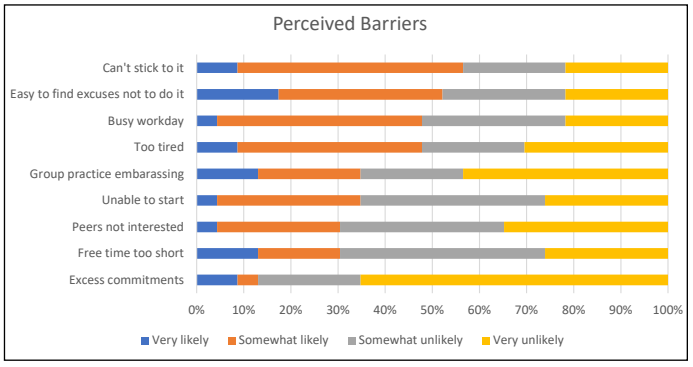


Figure 2: Barriers to gratitude practice amongst trainees.



DISCUSSION

This QI project suggests that standardized gratitude practice is feasible to integrate into a residency training program. Most

respondents reported having a positive experience with gratitude practice and were able to perform the practice a least a few times per week. The beauty of this exercise is its flexibility to suit any inpatient training experience, regardless of team size or specialty. It takes very little time out of the day and helps people notice positive things that happen each day. Residency training is designed to help trainees develop in many ways for their future careers, and this practice could be a useful addition to trainees' personal growth and resilience.

We achieved our immediate goal of increasing uptake of this practice; however, the next step is to address the barriers that respondents mentioned to make this a more sustainable practice. Establishing a new routine that trainees facilitate amongst themselves obviously requires buy-in from the trainees to stand any chance of persisting. The most cited perceived barriers of not being able to stick to the practice or finding excuses not to do it suggest that trainees might prioritize their care duties toward others over their own self-care. We often think about wellness as a concept or practice to pursue outside of the residency training environment, but it is unrealistic to expect to achieve a satisfactory level of wellness given the fact that trainees spend the majority of their time during their years in training at work. We need to validate trainees' needs to take care of themselves in their training environments, too.

We have gone to great lengths in medicine to improve patient care through standardized practices such as IPASS and the preoperative surgical checklist. Thankfully, these interventions have proven to be very effective and are excellent examples of how standardized routines can address preventable, systemic problems in medicine such as poor handoff communication and incorrect surgical procedures. We willingly continue these practices for our patients' benefit, and it seems logical that we could develop a standardized practice for our own benefit as trainees, too. Despite how busy residency is, it seems hard to imagine not being able to spare a minute to reflect on the good things that happened.

Moving forward, we will continue to review feedback from each cycle of trainees and see what we can do to make this part of the culture of our training program. We feel that this could be a valuable addition to the training environment at Seattle Children's Hospital and would be happy to share our experience with any other training programs that are interested in adopting a similar practice.

CONCLUSION

Implementation of EVS is an important step in understanding the PA behaviors in individuals that may have unique challenges to exercise. It can be easily implemented with a high response rate within one year of initiation in an amputation clinic. Implementation of EVS can provide valuable data to identify patients who are insufficiently active and provide them with brief exercise counseling and prescriptions to achieve better health. In implementing an EVS, care must be taken to ensure that staff feel comfortable assessing PA in every patient in order to provide equal care to all. Further work should be done to determine a process to decrease bias in obtaining EVS. Additionally, we should attempt to design and implement an intervention to help increase patient PA. Other subpopulations would benefit from implementation of an EVS to allow for better PA evaluation and counseling.

Acknowledgments

We would like to thank all the residents, APP fellows, and medical students who participated in this QI project. We would also like to thank our mentors, Dr. Cora Breuner and Dr. Maneesh Batra for their support and guidance with study design.

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Photo: Grace Um, MD

Developing a Health Equity Pathway for Internal Medicine Residents

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ABSTRACT

Emphasized by recent acts of police brutality against black men and women and the disproportionate effect of the COVID-19 pandemic on black and brown communities, UW Medicine continues prioritize promoting diversity and inclusion in every aspect of their mission and practice.[1] Furthermore, the ACGME mandates that residency programs include education on health disparities during training.[2] Traditionally, resident curriculum related to health equity only scratches the surface of the existence of disparities without touching on how the deep rooted effects of generations of systemic racism and xenophobia affect health outcomes and how the institution of medicine has contributed to perpetuating health disparities at a systematic level. A formal needs assessment of the current Internal Medicine residents at the University of Washington revealed that the vast majority of our residents found health equity topics including disparities and inequities, diversity and inclusion, and advocacy important to their career development and something that they were interested in learning more about in residency. However, less than 20% felt that their medical education thus far has provided them with adequate instruction in these areas. We aim to create an immersive and longitudinal Health Equity pathway for the UW Internal Medicine program with the goal of equipping future leaders with the knowledge, skills, and attitudes to apply anti-oppression frameworks to combat the structural origins of health disparities and inequities and who will continue to prioritize this work in their future careers.

INTRODUCTION

Poor health outcomes for black, indigenous, and other minority groups in the United States compared to their white counterparts have existed for over 400 years as a consequence of the country's distasteful history of colonization, slavery, and dehumanization of black and brown people.3 Despite the role that medicine has played in perpetuating these poor outcomes by medicalizing racial differences, the medical community has nevertheless attempted to identify and track these disparities since the beginning of the 20th century. It is widely demonstrated in the literature that genetic differences between races do not explain or account for these disparities, though there is a clear impact of race on health outcomes. More recently, health disparities researchers have reframed the discussion to recognize that although race is a social construct that in isolation should not cause disparate health outcomes, its existence has tangible societal effects like institutional racism and implicit bias which are the true drivers of disparities.[4]

In medical education, specifically, many graduate and undergraduate medical training programs in the US include teaching on the existence of health disparities and social determinants of health. However, many public health researchers, cultural anthropologists, and critical race theorists advocate that our understanding and education around health equity barely scratch the surface of truly addressing and correcting these issues in the medical field. In a review of curricula published in MedEd Portal's "Anti-Racism in Medicine" and "Diversity, Inclusion and Health Equity" collections, the balance of curricula described their goals as teaching learners to "define," "identify," and "understand" social determinants of health.[5,6,7] Only a few curricula included teaching about the underlying etiologies of health disparities or how to address them. When we as a community only focus on the existence of these problems such as social determinants of health and health disparities, we lose the opportunity to train more effective physicians, recruit and retain more diverse trainees, and ultimately lose an opportunity to work towards correcting the inequities in our health system.

We envision a curriculum that focuses on teaching residents to apply an anti-oppression framework to combat the structural origins of health disparities and inequities centered around three "pillars" detailing levels of impact: interpersonal, institutional, and societal. On an interpersonal level, we hope that residents can not only recognize that diversity in health care is important, but also build skills creating an inclusive patient-provider relationship and discuss injustice with patients in a trauma-informed way. We want residents to not only recognize that health inequities exist, but also have a foundation for analyzing how racism and other injustices affect health and how critical race theory and other anti-oppression frameworks can be used to shape public health research. We want residents to recognize that not only can simply attending protests be effective in inciting change, but also want them to learn specific advocacy skills such as partnering with community organizations and policy development. Our goal is to train physicians to take an anti-racist approach to intentionally dismantling the underlying structural, historical, politicial, and cultural norms that contribute to health disparities to the detriment of Black patients, Indigenous patients, and patients of color.[8]

NEEDS ASSESSMENT DATA

We created a targeted needs assessment for the current and recently graduated Internal Medicine residents at UW to help determine what content and scope would be helpful to include in this curriculum. Of 206 residents surveyed, 94 (45.6%) responded, 11.7% of whom identify as belonging to a racial group that is Underrepresented in Medicine and 16% of whom identify as LGBTQIA+. We asked residents to assess each of the 3 pillars in the following domains: Importance to their role as a physician, adequacy of instruction in their medical education to date, and desire for additional instruction. Responses were given on a Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"). Over 90% of residents agreed that each of the 3 pillars were important and that they desired further instruction in each pillar.

However, only 15-17% of residents agreed that they had already had adequate instruction in each pillar, highlighting a gap in our residents' medical education thus far in these areas.

Additionally, we asked residents to assess their preferred format for health equity curriculum whether it be a required block during residency, a one month elective, or an immersive and longitudinal pathway spanning over two years. Interestingly, approximately equal numbers of residents preferred a required or pathway format (28 and 26% respectively) and a majority of residents (46%) preferred an elective format. In free response answers, 7 of the surveyed residents pointed out that specific health equity curriculum should be required for everyone in the program so that everyone has exposure to this material.

Given the time restraints and demands of residency, we also asked questions to assess residents' willingness to prioritize this curriculum as a longitudinal pathway if it existed. We found that 32% of residents would choose to participate in a health equity pathway over other pathways and that almost half (45%) of residents who have not chosen to do a pathway would choose to participate in a health equity pathway.

PLANNED CURRICULUM

Based on these results, we are building a longitudinal Health Equity Pathway to prioritize developing health equity leadership capacity with in-depth training. Residents will apply for and be selected for this pathway during the intern year and the curriculum will span over the second and third years of residency with one month-long immersion block in the fall of each year as well as half-day didactic sessions, workshop sessions, clinical experiences, and site visits to community partners in the interim when pathway residents are on ambulatory or elective blocks. Residents will also be expected to complete a capstone scholarly project where they will be able to apply what they have learned in the pathway to research in health disparities, quality improvement, advocacy, or other domains related to health equity . We recognize the interest in other curricular formats which we hope will be addressed by other leaders at UW. Our intention is to depart from the traditional descriptive methods of teaching health disparities and instead analyze their underlying structural causes while teaching learners critical frameworks that can inform future research or advocacy. Ultimately, our goal is to prepare leaders who are equipped to recognize and address the underlying causes of health inequity in a way that disrupts harmful societal structures and creates healthier communities.

Acknowledgments

The authors would like to thank Daniel Cabrera, MD, Gaby Berger, MD, Bessie Young, MD, the Residency Diversity Committee, Ken Steinberg, MD, and Kelli Corning whose support made this project possible.

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Photo: Grace Um, MD

Resident "Zoom Burnout" During the COVID-19 Crisis

Authors: Jenny L. Yu, MD;* Daniel Y. Cho, MD, PhD; * Rebecca L. DeSanti, MD; Cameron J. Kneib, MD; Jeffrey B. Friedrich, MD, MC; Shannon M. Colohan, MD, MSc; *both authors contributed equally to this work

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ABSTRACT

Background: Residency education has adapted to current social distancing recommendations by relying heavily on videoconferences. There is concern however, that this new paradigm may lead to over-saturation or burnout.

Methods: A 12-question survey investigating resident experiences with educational videoconferences was distributed to University of Washington plastic surgery residents. A modified Maslach Burnout Inventory was used to assess resident burnout from virtual conferences. Conference attendance and reasons for missing conferences were compared using paired two-tailed t-tests.

Results: A total of 24 residents were given the survey with 100% response rate. There was a significant decrease in the total number of weekly attended videoconferences ($p<0.01$) and in the number of attended educational videoconferences ($p<0.01$) over time. Reasons for absences included clinical duties (92% of respondents) followed by symptoms of burnout, including forgetfulness (67%) and feeling fatigued by Zoom lectures (54%), and to a lesser extent the belief that the lecture was not educational (25%). 79% of residents reported at least occasionally feeling emotionally drained from videoconferencing and 88% reported at least occasionally feeling burned out due to the number of Zoom activities. Despite declining attendance and burnout, 96% believe that videoconferences should continue after the end of quarantine but in a limited quantity.

Conclusion: Videoconferences have become a valued means of resident education. The data suggests however that attendance has waned, largely due to what can be perceived as "Zoom burnout." Residents remain interested in continuing educational videoconferences, although prioritizing quality over quantity will remain essential to prevent emotional fatigue and burnout.

BACKGROUND

Significant adaptations in residency training have occurred due to the COVID-19 pandemic. There has been a large shift to the use of web-based videoconferencing platforms to facilitate distance learning for surgical residents in order to continue resident education.[1–9] Zoom has become the dominant videoconferencing platform for remote work, distance education, and online social relations. Within healthcare, its use has become widespread in clinical and business settings.

Plastic surgery has been at the forefront of virtual education by utilizing videoconferencing technology to develop new resident education programs,[3–5] including the American Society for Plastic Surgery (ASPS) Virtual Grand Rounds, Aesthetic Surgery Journal (ASJ) Virtual Grand Rounds and Global Education Meetings (GEMS), Plastic and Reconstructive Surgery (PRS) Digital Media resources, International Microsurgery Club Facebook webinars, and many others. These are in addition to virtual lectures and conferences developed by individual residency programs as well as multi-institutional virtual visiting professorships. Virtual educational conferences now play a significant role in resident education; however, there is concern that overuse of this modality may lead to educational burnout.

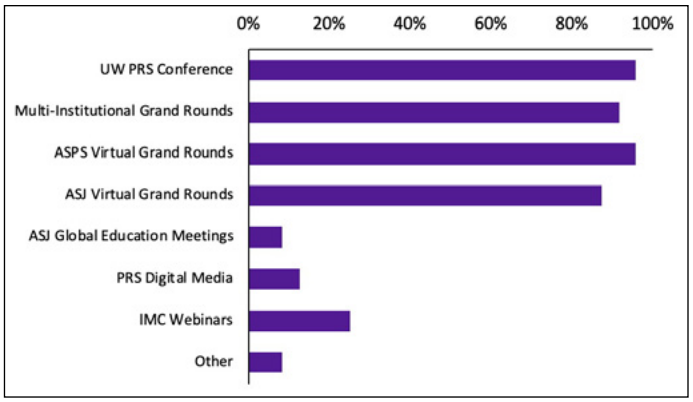
METHODS

An anonymous web-based survey was distributed to all residents in the University of Washington Integrated Plastic Surgery Residency Program (UW PRS). Awareness of educational opportunities, virtual conference attendance, videoconference habits, and desire for further web-based educational opportunities were assessed. A modified Maslach Burnout Inventory was used to assess resident burnout from virtual conferences. Paired two-tailed t-tests were used to compare maximal versus current conference attendance as well as reasons for missing videoconferences.

RESULTS

Survey response rate was 100% for the 24 UW PRS residents. There were varying degrees of awareness of the different virtual educational opportunities available to residents (Figure 1). The UW PRS weekly conference, multi-institutional virtual ground rounds, ASPS Virtual Grand Rounds, and the ASJ Virtual Grand Rounds had the highest rate of resident awareness, as these were the earliest established and most publicized at the start of the social distancing restrictions. In all, there were over 10 hours of virtual education lectures available to residents per week. Resident virtual attendance at these educational offerings was not tracked by the program, other than for the weekly program grand rounds.

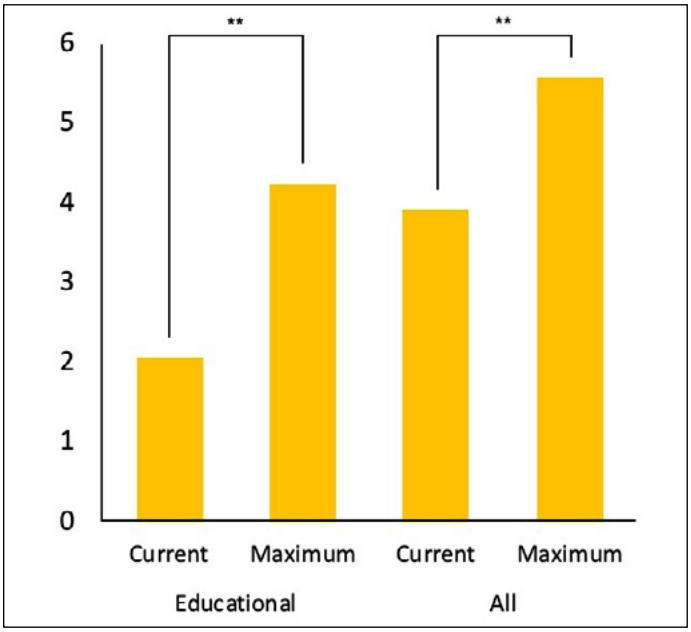
Figure 1: Resident awareness of specific virtual education opportunities



All residents attended a combination of administrative, social, and educational videoconferences during the pandemic. There was a significant decrease in the average number of total weekly

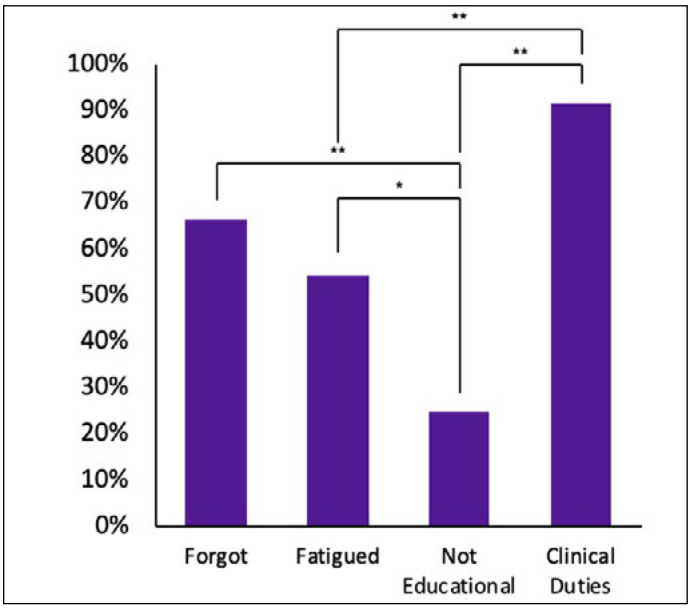
videoconferences attended by residents (5.58 initial vs 3.92 current, p<0.01). Specifically, there was a significant decrease in total virtual educational meeting participation over time (4.25 initial versus 2.08 current, p<0.01) (Figure 2). The results also show that educational conferences comprised the majority of resident videoconferencing

Figure 2: Current and maximum resident weekly attendance at virtual education Zoom meetings versus all Zoom meeting use



activity. Reasons offered for decreased attendance were clinical duties (92%) followed by reasons that could signify burnout: forgetfulness (67%) and feeling fatigued by the online lectures (54%) (Figure 3). A significantly lower proportion of residents stated their absence was due to a belief in a lecture's lack of educational value (25%).

Figure 3: Resident reasons for missing virtual education opportunities



The modified Maslach Burnout Inventory questions demonstrated that residents were developing negative associations with these educational videoconferences (Figure 4, top). A total of 88% of residents reported feeling very frequently or occasionally burned out due to the number of virtual educational activities. Additionally, 79% of residents reported feeling at least occasionally emotionally drained and exhausted from videoconferencing. The majority of residents (75%) "multi-task" or perform other activities during videoconferences, and 55% are unlikely to watch a recording later if the live lecture was

Figure 4: Modified Maslach Burnout Inventory assessment of resident virtual education experiences (top); resident behavior and attitudes toward virtual education experiences (bottom)

	Always	Very Frequently	Occasionally	Rarely	Never
I feel used up/worn out at the end of the day.	0%	17%	71%	8%	4%
Interacting with people on videoconferencing is energizing and relaxes me.	4%	4%	25%	54%	13%
I feel emotionally drained/exhausted from videoconferencing.	0%	25%	54%	21%	0%
I feel exhilarated/inspired by participating in Zoom educational conferences.	4%	17%	33%	46%	0%
I feel burnt out by the number of Zoom activities.	4%	46%	38%	8%	4%

	Always	Very Frequently	Occasionally	Rarely	Never
Do you take notes during conference?	8%	21%	33%	17%	21%
Do you perform other activities while listening/watching educational conferences?	4%	17%	54%	21%	4%
If you miss a conference, how frequently do you watch it later if it's recorded?	0%	13%	33%	38%	17%
Do you feel like Zoom conferences are useful/educational?	17%	42%	42%	0%	0%

missed (Figure 4, bottom).

Despite declining attendance and burnout, most residents felt these virtual lectures had educational value (Figure 4). 96% believed that the videoconferences should continue after the end of social distancing but felt a reduced number of lectures would be ideal with an average recommendation of 1.32 per week.

DISCUSSION

During the COVID-19 pandemic, the plastic surgery community has quickly collaborated to pioneer new educational programs through virtual means. Overall, residents have favorable attitudes towards the incorporation of virtual educational conferences; however, with an overabundance of opportunities available, resident attendance and engagement has decreased over time.

This study shows that residents are experiencing "Zoom fatigue" or "Zoom burnout", which current literature suggests could be the result of specific characteristics of videoconferencing. Distance learning is associated with isolation which leads to depersonalization and burnout[10]. Distance learning is associated with isolation which leads to depersonalization and burnout[10]. Videoconferencing also results in distortion or loss of nonverbal cues, subsequently requiring greater focus than in-person interactions. Group activities may be more difficult using telecommunication modalities as the time lags and other features of videoconferencing have been shown to lead to decreased

trust.[11–13] Wide use of Zoom for professional and social interactions blurs the lines between all aspects of life, which can lead to greater extremes in mood.[14] This "Zoom burnout" is likely further compounded by the general anxiety, fear, and stress surrounding the COVID-19 pandemic as well as from prolonged social isolation.

Approaches to fight this "Zoom burnout" include creating fun, social outlets for residents on virtual platforms such as "virtual happy hours" to foster a more positive association with this technology.[15] Incorporating more interactive elements to these videoconferences can improve resident engagement; potential ideas include discussions, debates,[16] and mock oral examination formats. Additionally, efforts should be made to maximize quality and reduce the number of these virtual lectures as hospital operations return to normal. Coordination among content producers to create a more structured and unified curriculum may be of benefit.

CONCLUSIONS

Nearly all residents are interested in continued virtual learning opportunities but in a more limited quantity. "Zoom burnout" experienced due to the high concentration of these videoconferences during the COVID-19 pandemic has potentially decreased resident engagement. These virtual lectures are not a panacea for surgical education nor a replacement for in-person or experiential learning. They can serve as adjuncts to existing plastic surgery curricula however, by allowing access to experts outside of each institution, exposing residents to alternative approaches and techniques, and fostering collaboration and community across the specialty. Collective efforts to produce the highest quality educational opportunities will benefit plastic surgery learners of all levels.

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Photo: Grace Um, MD

Efficacy of a Standardized Perioperative Clinical Care Pathway for Below Knee Amputation

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ABSTRACT

Clinical care pathways are evidence-based guidelines for standardizing perioperative care in surgical patients and have been shown to improve patient outcomes and lower healthcare costs. We developed, implemented, and evaluated a standardized care pathway for the perioperative course of all patients undergoing below-the-knee amputation (BKA) at Harborview Medical Center. Using a retrospective cohort study, we evaluated the impact of this standardized care pathway by comparing patient outcomes for all BKAs one year following pathway implantation (n=82), and one year prior to pathway implementation (n=76). The standardized perioperative care pathway was associated with an increased likelihood of discharge; these findings corresponded to a 2-day reduction in median length of stay. BKAs that were due to either an increased severity of injury or that were urgent/emergent were associated with a decreased likelihood of earlier discharge. In patients receiving non-urgent BKAs in the post-implementation group, there was an overall cost savings of 31.6%. In the post-implementation group, opioid use was also decreased by 31.84%. Our work supports the development and implementation of standardized perioperative care for surgical patients to improve outcomes and costs. The improvements seen with these pathways not only benefit patients but also streamline care for medical providers and maximize the cost savings of hospital systems.

INTRODUCTION

Clinical care pathways are evidence-based guidelines to standardize the perioperative care of surgical patients. These pathways have been implemented at institutions worldwide to standardize care pre-, peri-, and post- surgical procedures. Pathway implantation has been associated with lower healthcare costs and has improved patient outcomes.[1] However, there has yet to be a study to evaluate a clinical pathway applied to all causes of below-the-knee amputation (BKA). BKAs currently account for 73% of all major unilateral lower extremity amputations in the United States, and the worldwide incidence of this operation continues to increase.[2] We implemented a standardized care pathway for BKAs at a level 1 trauma center. In the present study, we aimed to evaluate the pathway's patient outcomes to better understand benefits of pathway use, and to assess areas for improvement.

METHODS

We developed a standardized perioperative care pathway for patients undergoing BKAs at Harborview Medical Center, a regional level 1 trauma center. The pathway was designed based on the Department of Veteran Affairs and Department of Defense guidelines[3] and included targets of care for pre-, peri-, and post- surgery including multi-modal pain control, rehabilitation services, dressings and immobilizations, early post-operative mobilization, and for standardization of surgical technique (**https://occam.uwmedicine.org/media/2218/lower-extremity-amputation-pathway-2019-05-14-new-format.pdf**). Educational material was included in the pathway to ease patients in understanding the course of the procedure, and helping them to establish expectations (**https://occam.uwmedicine.org/media/1407/bka-amputation-below-knee-caremap.pdf**). All surgeons, regardless of specialty, implemented the pathway for perioperative patient care beginning November 2017. At that time, an order set based on the developed pathway containing all pathway components was created in the electronic medical record (EMR) allowing for ease of pathway implementation.

Using a retrospective cohort study, we evaluated the impact of our BKA standardized care pathway by comparing patient outcomes for all BKAs that occurred during the twelve-month period following pathway implementation (n=82), and during the twelve-month period prior to implementation (n=76). Data was collected using EMR chart review. Outcomes of interest included hospital length of stay (LOS), mortality, and inpatient post-operative opioid use. Information on the underlying cause of BKA was also collected.

Demographic differences in patient characteristics between pre- and post- implementation groups were assessed with Student's t-tests or Chi square tests as appropriate. Cox proportional-hazards regression was used to compare LOS between groups while controlling for confounding by differences between the two groups' illness severity as determined by the All Patients Refined Diagnosis Related Groups Severity of Illness (APR-DRG SOI) subclass, age, and whether the amputation occurred on an urgent/emergent or elective basis (Table 1A). These demographic factors were selected due to their potential to independently affect the patient outcomes regardless of the intervention.

RESULTS

The cause of each BKA was divided into one of four etiologies: vascular (including diabetes mellitus and peripheral vascular disease), trauma (including burns), acute infection (including necrotizing soft-tissue infection and sepsis), or other cause (such as congenital conditions). During the pre-implementation period, the underlying reason for patient BKAs were 56.6% vascular, 32.9% trauma, 7.9% infection, and 2.6% other. During the post-implementation period,

41% of BKAs were of vascular origin, 29.3% from trauma, 23.2% from infection, and 6.1% other (X^2 (3, N=158) = 8.9, p = 0.03).

The standardized perioperative care pathway was independently associated with an increased likelihood of discharge (Hazard Ratio 1.5, 95% CI 1.1-2.2, Table 1B) after controlling for confounders including age, illness severity and urgency of amputation. Compared to patients who underwent BKA prior to implementation of the pathway, these findings correspond to a 2-day reduction in median LOS (Table 1C). BKAs that were due to either an increased severity of injury or that were urgent/emergent were associated with a decreased likelihood of earlier discharge (Hazard Ratio 0.3 and 0.2 respectively). In patients receiving non-urgent BKAs in the intervention group, there was an overall cost savings of 31.6% ($19,339 vs $33,204, p=0.03). Opioid use by morphine equivalent dosage was decreased by 31.84% in the intervention group compared to the pre-implementation group (1830.76 vs 2744.02, Table 1C). There was no significant difference in mortality between the post- and pre- implementation groups (5.26% vs 2.44%, p = 0.35). In the post-implementation group, the EMR order set was used in 59.75% of patients undergoing BKAs.

DISCUSSION

We demonstrated that a clinical care pathway for the standardization of perioperative care in BKAs improved patient outcomes by reducing LOS and postoperative opioid use. In non-urgent amputations, we observed a reduce cost of care. We believe that reduced costs were not observed in urgent cases due to the underlying differences in patient populations between urgent and non-urgent groups. Our non-urgent cases were mostly made up of stable patients undergoing BKA due to diabetic complications, whereas the emergent cases were frequently due to trauma or complications of sepsis. In these emergent cases, we hypothesis that other significant factors contributing to increase in-hospital costs, such as high-acuity injuries requiring long stays in intensive care units. Furthermore, there was likely cost savings seen in the non-urgent group due to the care team's ability to prepare patients for the pathway prior to surgery, a luxury not seen in emergent cases.

As previous studies have found, it is difficult to maintain consistent use of pathway protocol over time.[4-5] Immediately upon implementation, the order set for the BKA pathway had a high percentage of use; however, we saw a gradual decline in its use over the twelve-month period analyzed. In addition to general challenges faced with implementing a care pathway, our hospital may also have a unique challenge in maintaining adherence to the pathway due to the high frequency of resident turnover within the departments preforming BKAs. Residents are frequently the physicians who apply order sets following procedures. As resident staffing is transient, with residents rotating as frequently as each month, it may have been more difficult to ensure communication regarding the existence of a new care pathway, resulting in decreased utility of the order set over time. Nonetheless, all post-implementation data was considered in our analysis and if the pathway was indeed contributing to reduced LOS and cost savings, we present a conservative estimation of their effects.

Overall, our findings support the standardization of perioperative care for BKAs through patient optimization, multimodal analgesia, and a coordinated interdisciplinary care in order to improve patient outcomes and reduce hospital costs. Future research will begin to look at patient reported outcomes as a result of care pathways with reported outcomes including pain level, quality of life, and satisfaction of care.

Figure 1. Kaplan Maier curve comparing the proportion of patients remaining in the hospital relative to length of stay following BKA receiving care per the traditional (red) versus standardized perioperative pathway (blue) care.

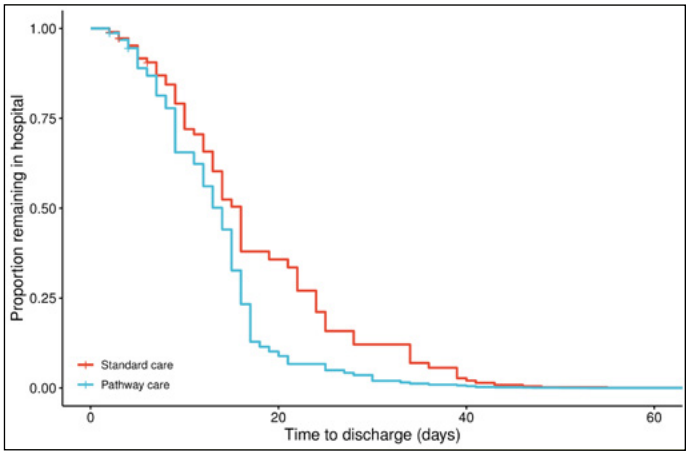

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Table 1A

	Pre-implementation (n = 76)	Pre implementation (n=82)	P-value
Age	51.5 (13.9)	56.7 (14.8)	0.025*
Sex			
Male	67%	77%	0.17
Female	33%	23%	
BMI	29.1 (8.4)	28.4 (7.0)	
Diabetes	56.6%	54.9%	0.83
A1c	8.4 (2.2)	8.9 (2.6)	0.35
Tobacco Use	37.3%	33.3%	0.6
Coronary Artery Disease	25%	22.2%	0.68
Peripheral Vascular Disease	34.2%	32.9%	0.86
Current Opiate Use	43.4%	38.3%	0.51
Operative Urgency	42 (18%)	8 (11%)	
Elective	24	25	0.88
Urgent/Emergent	52	57	
APR-DRG Severity of Injury			
1	2	4	
2	15	17	0.040*
3	40	26	
4	19	35	

Table 1B

Covariate	Hazard Ratio	95% CI	P-value
Age	1.004	0.991-1.018	0.574
Severity of Injury	0.329	0.247-0.437	<0.001
Urgent/Emergent Surgery	0.196	0.122-0.315	<0.001
Pathway Care	1.516	1.051-2.188	0.0262

Table 1C

	Pre-implementation (n = 76)	Pre implementation (n=82)	P-value
Median Length of Stay (days)	16 (95% CI 13-21)	14 (95% CI 12-16)	
Cost of Care (USD)			
Elective	33,204.00	19,339.00	0.03
Urgent /Emergent	91,981.00	99,007.00	0.66
In Hospital Mortality	4 (5.26%)	2 (2.44%)	0.35
Inpatient Opiate Use (MED)	2744.02	1830.76	

Photo: Grace Um, MD

Learning Mindfulness Self-Compassion Within A Healthcare Community: A Virtual Group Hug to Combat "Pandemic" Stress

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In September 2019, I was stressed. I had just moved to the Pacific Northwest (transplant from the Midwest), I was the only fellow in my surgical subspecialty program (expected, but still isolating), I was in a long distance relationship (yes, sucks), and I was studying for my adult cardiothoracic surgery written boards (nope, no fun at all). So, when an 8-week course in "Mindfulness-Based Stress Reduction (MBSR) for Healthcare Professionals" appeared through Mindfulness Northwest[1] and UW Medicine,[2] I signed up. In retrospect, it was hard investing two hours every Sunday evening to meet in-person off-campus. But, mentally, I needed a break. I wanted tools to defeat my self-sabotaging behaviors. I was searching for peace, focus, and less anxiety. So, I signed up for myself.

During the first class, I discovered a group of healthcare professionals in need, just like me. It didn't matter which specialty, which practice location, or whether you were a junior resident or a seasoned attending. It didn't matter your role, whether as a clinician, researcher, or administrator. Everyone was universally stressed. Together, we shared our stories, specific challenges, and learned MBSR techniques. Step-by-step, we learned the techniques and benefits of Mindfulness: to be fully present and engaged in the moment, aware of thoughts and feelings, without distraction or judgment.[1,3] Like most new skills, it took patience and practice. And, predictably, I recognized that my years of healthcare training had collectively developed an unhealthy anti-mindfulness state: to be constantly totally distracted, planning your next steps, unaware of your own thoughts/feelings, painfully aware of everyone else's thoughts (real or imaginary), with the harshest judgment reserved for oneself. Self-care was associated with guilt – an irresponsible indulgence. Perhaps, most importantly, in this class, I learned that I wasn't alone in these tendencies. No one could have predicted that a year later, gathering with 30 strangers, doing deep-breathing exercises, would be considered an unimaginable luxury.

In March 2020, as a result of COVID-19, our last two group classes were switched to Zoom. Suddenly, this community we had built around mental well-being for healthcare professionals seemed ironically relevant. In the now familiar "grid view," everyone shared their new distresses. Older care providers expressed feelings of guilt since they were forbidden to work on the frontlines, feeling "benched" in the telehealth realm. An Infectious Disease fellow broke down crying for her patients because they were dying… truly heartbroken because they were tragically dying alone. A nurse chose to delay her retirement. A VA administrator explained the extensive meetings necessary to gather ventilator equipment for the expected long haul and patient surge. Fear and uncertainty were rampant. Yet, by listening to each other, we found support to face the challenges of protecting our patients and families. We provided comfort to each other in this safe, familiar environment designed to build our resilience. This virtual reassurance and camaraderie gave me strength to fight my own personal stresses.

Fast forward a year and the need for mental well-being resources for healthcare professionals is even more dire amidst our experience of unrelenting acute on chronic stress.[4] We are now in a different phase of the pandemic response which requires patience, insight, and self-care. Yet, the exact tendencies that limited healthcare professionals pre-pandemic to engaging in self-care activities have become exacerbated. This gap is proven by the 6-week Mindfulness Self-Compassion course taught by Drs. Elizabeth Lin and Anne Browning filling up overnight with 100 healthcare providers. Once again, the stories are relatable. Stressed, over-worked, isolated, and increasing suffering/anxiety with incessant self-criticism. Social distancing has limited our respite options whenever we have rare moments where we can escape the hospital. The pandemic has stolen the venues outside of work that we tend to use to re-energize, such as socializing with friends and family. Combined with increased stressors at home and at work (or the nefarious combination of work at home while your children also school at home), if there were more than two ends to burn the proverbial candle, then that is what we have been tasked to do.

Everyone can understand this gentle reminder: you must place your oxygen mask on yourself before assisting others. Even taking several minutes each week to engage in a mindfulness practice, gives us an opportunity to stop this downward spiral. It enables us to breathe. It enables us to check-in with ourselves. It provides a space between what is happening in our environment and how we choose to react. It allows us to accept ourselves for who we are in this moment. It gives us the recognition that we are much nicer to other people than ourselves. It allows us the opportunity to practice self-compassion during these unprecedented distressing times.

However, healthcare professionals can understand this more typical reality: your own oxygen mask has fallen off after you secured it, but you're unable to put it back on because you're holding other people's oxygen masks! If this is your current situation: "Don't despair!". "There is hope!". "You're in luck!". You are struggling surrounded by a healthcare community whose exact purpose is to care for others, especially those who are hurt, suffering, or too weak to care for themselves. It is no stretch of the imagination that if you can learn to take excellent care of your patients, then someday you can also master taking care of yourself. But, right now, if you need help while you learn these skills, that's absolutely acceptable. If you are a resident/fellow who needs resources for well-being, UW GME has a "Wellness Corner" with events and peer-to-peer counseling.[2] Allow yourself to experience a *HUG*, even if it's virtual. Maybe you need a co-worker to hold up your oxygen mask, just until you can get enough of a break to hold it yourself. We are physically distanced, but not socially isolated. We will

get through this together. Yet, our healthcare community is going to have a difficult time taking care of everyone else if your valuable self is not being taken care of or not allowing others within our profession to take care of you. You are not alone. Here is an oxygen mask. Take a nice, deep breath.

Acknowledgements

Eileen Twohy, PhD; Anneliese Schleyer, MD; Susan Canny, MD; Don Grubb, MD, and Mary Shwetz, MD; Richard Hall and Mindfulness Northwest; and Anne Browning, PhD, and the UW Resilience Lab.

Resources

1. Mindfulness Northwest: **https://www.mindfulnessnorthwest.com/**

2. UW GME "Wellness Corner" for Residents/Fellows: **https://sites.uw.edu/uwgme/2020/09/15/wellness-corner-september-15th-2020/**

3. Headspace for Healthcare Professionals: **https://help.headspace.com/hc/en-us/articles/360045161413-Headspace-for-Healthcare-Professionals**

4. UW Resilience Lab: **https://wellbeing.uw.edu/unit/resilience-lab/**

Photo: Madonna E. Lee, MD

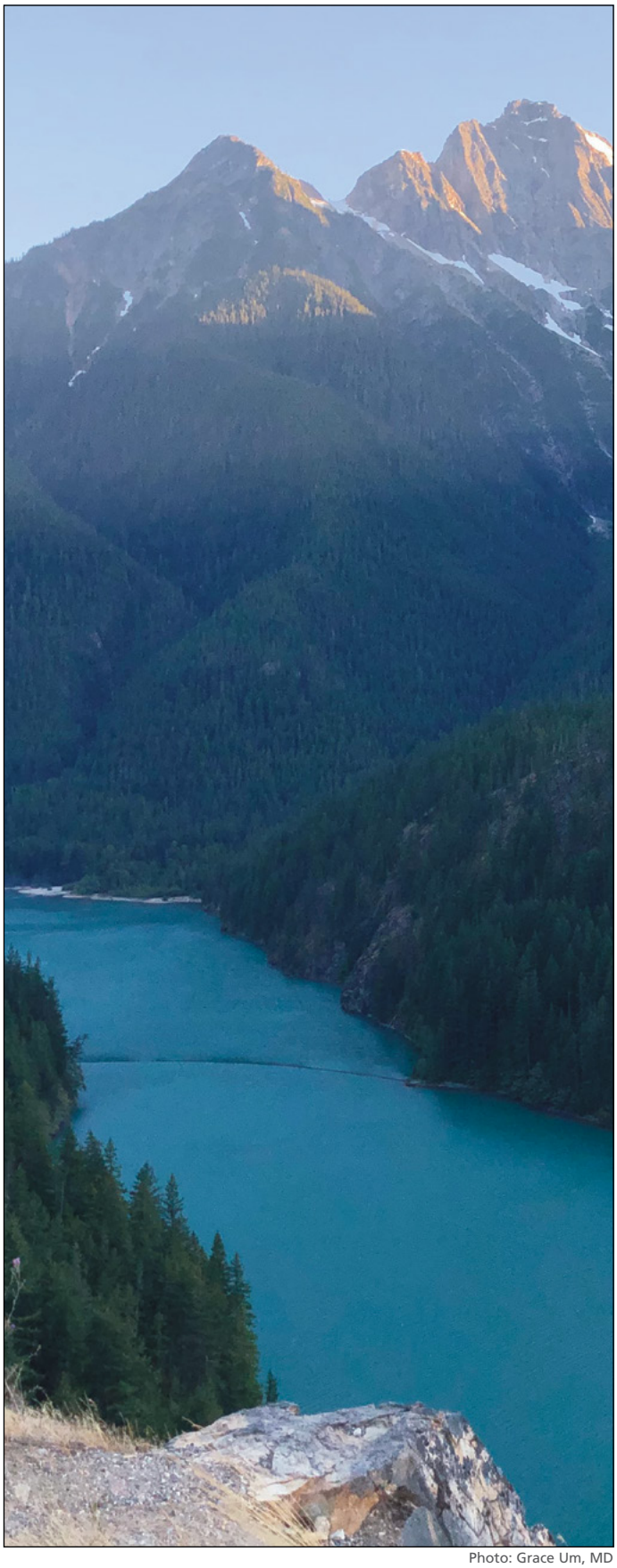

Photo: Grace Um, MD

Reflections:

Perspectives on a Pandemic

Photo: Lauren Feld

Photo: Natasha Kwendakwema, MD

Photo: Natasha Kwendakwema, MD

March for Justice
Seattle, Washington
6/9/2020

Photo: Lauren Feld

Reflections:

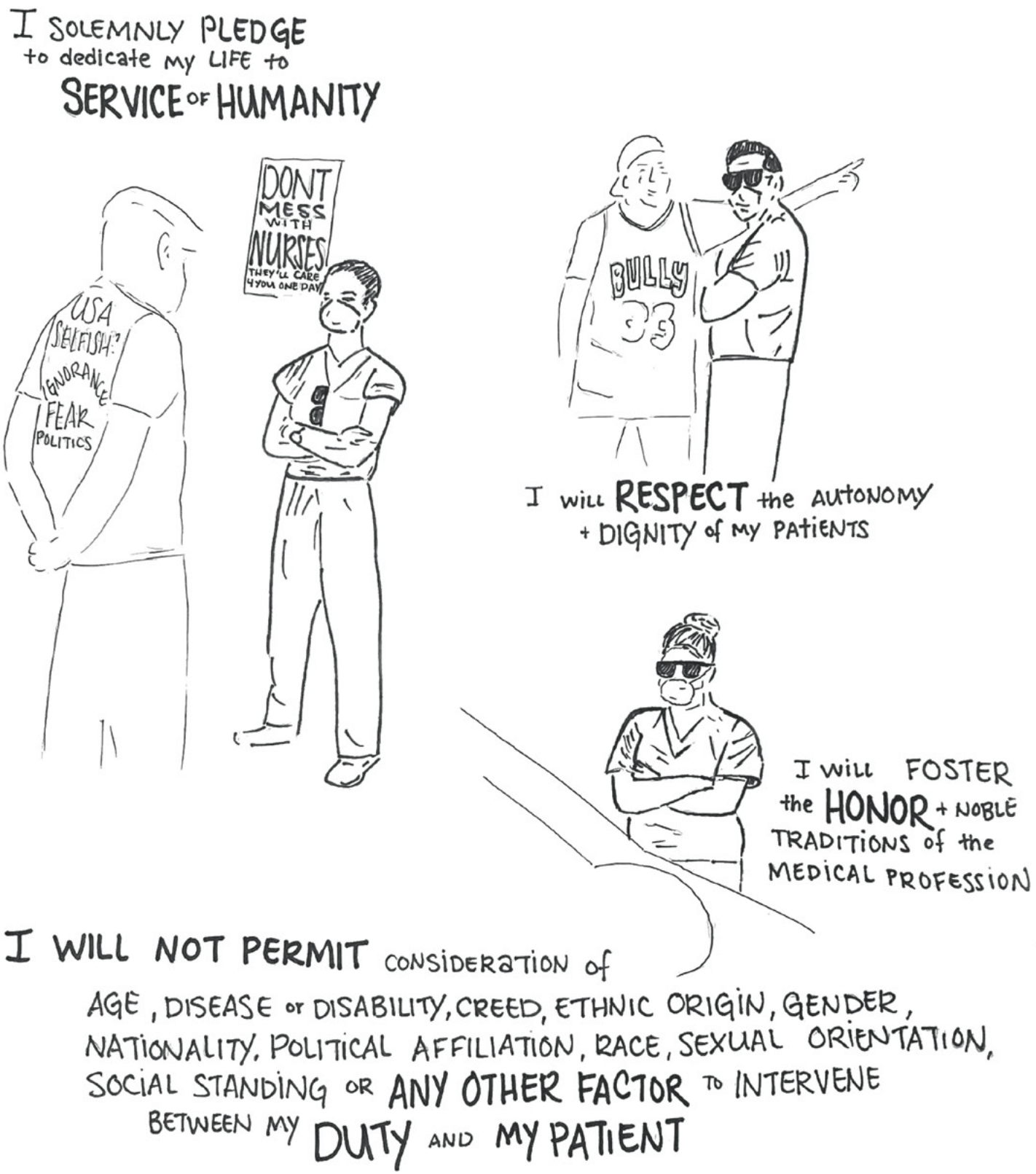

Photo: Grace Um, MD

Reflections:

Photo: Grace Um, MD

Photo: Kevin Blau, MD

Stethoscope

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Starting at the bell of the stethoscope,
a physician's journey begins with what some may consider
a naive sense of eagerness, optimism and hope
that we will be able to help others.
As we are plunged into the grind of medical school,
residency, and fellowship, physical and emotional exhaustion
begins to take a toll.

With each leaf representing the various qualities
that we strive toward (empathy, compassion,
knowledge, motivation, skill, etc.),
we may see some of these things flourish
or wilt as the lengthy journey continues.

Just as a stethoscope divides at its center,
a physician will be faced with barriers to achieving well-being.
Exhaustion, depersonalization, and/or a reduced sense of
personal accomplishment are often too common
and can put both clinicians and patients at risk.

This can undoubtedly be heightened in the face of a pandemic.
However, by working to promote clinician wellness,
and improving the quality of our system through
quality improvement projects, the impact
we can make on our patients and colleagues
can be greater than we ever imagined,
and echo
into the future generation of providers.