

## PERSPECTIVE: PART I

# HARM REDUCTION AND THE DRUG OVERDOSE CRISIS: EVIDENCE AND ADVOCACY OPPORTUNITIES

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Many physicians began their journey in medicine with a rite of passage that involved the Hippocratic Oath and emphasized the principle of “first, do no harm.” Despite the foundational position of this principle in medical training, practices that seek to first reduce harm, or harm reduction, remain outside the scope of general medical practice for many clinicians and in many healthcare settings. As of December 2017, more than 70,000 Americans died of a drug overdose in the prior year. In the midst of the worst drug overdose epidemic in U.S. history, general internists have an opportunity to lead the integration of harm reduction into their work as clinicians, educators and researchers. In this perspective, we discuss five distinct but complementary harm reduction strategies, both those that are increasingly the standard of care in general medical settings as well as those that are relatively new areas of focus in the United States. We briefly discuss each strategy and identify advocacy opportunities at the local, state and federal levels for clinicians, educators, and researchers.

There is no universal definition of *harm reduction* and no single comprehensive list of harm reduction strategies. The Harm Reduction Coalition notes that harm reduction “accepts, for better or worse, that licit and illicit drug use is part of our world and chooses to work to minimize its

harmful effects.” Harm reduction “establishes quality of individual and community life and well-being—not necessarily cessation of all drug use—as the criteria for successful interventions and policies.” A tenant of harm reduction is meeting people “where they’re at,” accepting that they may not be interested in stopping or reducing drug use while also attempting to address the negative consequences of drug use including skin and soft tissue infections, transmission of HIV and hepatitis C, substance use disorder, incarceration, overdose, and death.

**Overdose education and naloxone distribution** programs seek to prevent opioid overdose deaths by educating people at risk and potential bystanders about preventing, recognizing and responding to overdoses. Education includes the use of naloxone, an opioid antagonist that reverses potentially life-threatening respiratory depression. In Massachusetts, a state-supported, community-based OEND program reduced opioid-related overdose deaths by up to 46%.<sup>1</sup> The availability of naloxone differs by state. Policy approaches to promote availability of naloxone include liability protections for individuals administering naloxone; as of 2017, “Good Samaritan laws” had been enacted in 40 states and the District of Columbia.

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## FROM THE EDITOR

# REFLECTIONS ON LEADERSHIP AND MENTORING

Joseph Conigliaro, MD, MPH, Editor in Chief,  
*SGIM Forum*

For the most part, my *Forum* editorials have focused on one or more of the articles in an issue and my impression on its message and relationship to general internal medicine, and the Society as a whole. This month I'm going to deviate a little and throw caution to the wind by sharing a recent professional experience of my own. This summer, I was asked to participate as a mentor in the Klar Leadership Development Program (Klar LDIM) at the Zucker School of Medicine at Hofstra/Northwell. Klar LDIM is a longitudinal program that focuses on leadership, team building, decision-making, and innovation management and introduces these topics to medical students through a variety of methodologies, which includes an eight-week long summer experience, longitudinal mentorship, case study discussions, healthcare policy advocacy opportunities, and seminars.

The formal mission of the Klar LDIM program is to expand and accelerate the development of leadership and innovation management skills in a select cadre of medical students preparing them as future healthcare leaders. As I often do, I agreed to be a mentor. And, as often happens, it didn't take long for me to worry about how I am going to commit to this longitudinal mentorship experience and how can I make it interesting. When not caring for my small cohort of patients, teaching, or working on a research grant, my days are filled with unexciting meetings, discussions with faculty and staff, and mentoring my general internal medicine faculty. Hardly the kind of stuff that would keep a member of "Generation Z" occupied and nurture an interest in a career in academic general internal medicine. Guiding students in the art and practice of medicine was easy compared to this. This would be the first time that I would be responsible for a student interested in learning about the "non-medical" part of my job.

As I often do when faced with a new challenge, I started examining how I spent my time and paused to reflect on why I do what I do. Why did I approach meeting with the finance people the way I did? Did I compromise too much on my proposed budget and give up any advantage I may have in funding new innovations for the division? This practice of thinking about the process of each everyday task so that I can explain and find teachable moments for my student allowed me to reflect on my own leadership style and to influence the experi-

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# A SABBATICAL YEAR FOR ORGANIZATIONAL REJUVENATION

Giselle Corbie-Smith, MD, MSC, President, SGIM, and Eric B. Bass, MD, MPH, CEO, SGIM

*We are thinking of the current year as a “sabbatical year” for SGIM during which we will clarify our vision, refocus our mission, better understand our organization’s capacity, and capitalize on our collective strengths to rejuvenate the organization and increase its value to you, the members.*



**W**e are all familiar with the concept of taking a sabbatical from work, whatever that work may be. Some of us have been fortunate enough to have taken a sabbatical and understand how rejuvenating such an experience can be, both personally

and professionally.

Just as an individual can be rejuvenated by a well planned sabbatical, so can an organization. SGIM has been adding initiatives, programs, and activities since its first annual meeting in 1978. All too often we have not let go of existing efforts, or ensured that new or proposed efforts fit with the current focus, needs, and priorities of our members and the organization. While we have done many things well, Council and Staff agree that we have significant opportunities for improvement in the ways we conduct business and how we serve you, our members. We are therefore thinking of the current year as a

“sabbatical year” for SGIM, a time during which we will clarify our vision, refocus our mission, better understand our organization’s capacity, and capitalize on our collective strengths to rejuvenate the organization and increase its value to you, the members. I hope that members at all levels will understand why we are doing this and will join in the effort.

One of our first actions toward rejuvenation was to have Pyramid Communications conduct an audit of the effectiveness of our communications and make strategic recommendations. You may recall, I reported on the results of that audit in my second *Forum* article. The Pyramid Report noted several areas of strength of SGIM and several areas of concern that revolved around the need for an organizational strategic plan to guide decision-making and drive our communications strategy. One specific recommendation was to “revise and refresh” SGIM’s mission and vision. To that end, we dedicated time at the

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# PHYSICIAN SUICIDE IS A PUBLIC HEALTH IMPERATIVE

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*"Dr. Henry Andrews, a physician...committed suicide about 2 o'clock yesterday morning...*

*Despondency was the only cause that could be assigned...He was very dejected but never hinted at suicide."*<sup>1</sup>

—An 1886 obituary published in *The New York Times*, the day after Christmas.

*The body of Andrea Liu was found...[she] did not show any signs she was stressed when they last saw one another at a fundraiser for the school's free clinic last month."*<sup>2</sup>

—A short article published online in *New York Post* in May 2018.

Physician suicide is a public health imperative. After 130 years, physicians, residents, and medical students are still dying by suicide, traumatizing families, friends, patients and medical communities. Since the 1960s, more studies of physician suicide and possible risk factors have been published. Some, for example, indicate physician suicide disproportionately affects women physicians. Also, the phenomenon is global. In more recent years and with social media, unverified speculation is growing that physician, medical student, and resident suicides are increasing in incidence. It seems that a physician's death by suicide is first noted on social media or online newswires by a member of their community, a form of backchannel communication in the absence of official or standard platforms for dialogue.

Suicide carries negative stigma, especially among physicians. Generally, mental health and substance use disorders are risk factors for suicide; however, 54% of people who die by suicide do not have known diagnoses, according to a June 2018 CDC report. Physicians are no exception. Social or institutional stigma, a culture of silence, and a false culture of strength prohibit at-risk physicians from accessing timely, non-judgmental and confidential treatment. Stigma and its consequences can also interfere with investigations of the root cause.

To map existing knowledge from peer-reviewed literature, we received a grant from the Arnold P. Gold Foundation to perform a scoping review about physician suicide. We also aim to highlight opportunities for further research, education, and advocacy with the specific goal of preventing suicide among physicians. We

presented preliminary findings at the Gold Foundation's Mapping the Landscape Symposium in May 2018.

We performed an iterative search of two electronic databases in Fall 2017, re-run in April 2018, for relevant English-language publications. The approach was inclusive, including publications on suicidal ideation, behavior, or completion, among physicians, residents, and medical students.

Initial findings indicate that the epidemiology of physician suicide has been studied predominantly in the United States, Norway, Sweden, and the United Kingdom. Most studies are observational studies based on vital statistics, membership registries, obituaries, and/or death certificate ascertainment. Suicidal ideation and attempts have been assessed via cross-sectional surveys of subpopulations, often medical students and residents, in countries on every continent except Antarctica. Beyond gender, no data is published on other minority group subpopulations.

Hypotheses about unique suicide risks for physicians have been proposed dating to 1922. However, causal relationships remain difficult to prove. For example, proposed risks for suicide among physicians include: access to and increased medical knowledge about lethal methods among physicians; personality traits, such as tendency towards perfectionism; and adverse childhood experiences or dysfunctional parental relationships. Yet, only observational studies and case reports may support the access and knowledge hypothesis; few studies examine association of personality with suicidal ideation or attempts; and no published studies support adverse child-

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hood experience or parental relationships as unique risks for physician suicide.

In an effort to explain physicians' increased vulnerability to death by suicide, one investigator applied the interpersonal psychological theory of suicidal behavior (IPTS).<sup>3</sup> The IPTS posits three necessary and sufficient precursors to death by suicide: (1) *thwarted belongingness*, a feeling of disconnection with others, (2) *perceived burdensomeness*, a miscalculation that one's death would relieve burdens on others, and (3) *acquired capability*, habituation to previously provoked fear responses, including losing the fear of pain involved in taking one's life. This can stem from repeated exposure to painful or provocative stimuli, including events triggering second victimization, such as patients' poor outcomes, death, and suffering.

Role strain, another theory to describe physician risks in their work environment, is a mismatch between social and institutional norms and the physician's roles. In other words, institutions and policies might not adequately support physicians' performance of their roles as a committed healer. This is problematic when physicians are expected to always function at a maximum level of competence.<sup>4</sup> Further, physicians are at high risk of burnout, although no direct causal relationship between burnout and suicide has been established. Naturally, the relationship between burnout, mental health disorders, substance use disorders, and suicide is complex.

Finally, suicide contagion or clusters, in which suicides may occur in close chronologic or geographic proximity, is also an important concept in dialogue about physician suicide. Best practices on communication and reporting about suicide could be better disseminated to potentially mitigate such concerns. Unfortunately, a fear about such clusters may paradoxically fuel censorship and lack of support for open, non-judgemental dialogue about

physician suicide risks, prevention, and deaths: that fear has not triggered an accompanying public health response.

From our preliminary findings and conversations with experts in humanism research, education, and advocacy at the Gold Foundation MTL Symposium, the following are a few actionable opportunities to potentially address the public health imperative of physician suicide:

- **Explore cross-disciplinary learning and program development towards alternative problem-solving for populations exposed to similar pressures.** Suicide rates for physicians are higher than some non-healthcare professions, but other healthcare professions, such as nursing, pharmacy, dentistry, and veterinary medicine are also affected by suicide rates higher than that of the general population.
- **Lead and foster environments of collegiality and mutual respect.** Much like we aim to be self-compassionate and minimize self-criticism, treating colleagues, affiliates and other members of the healthcare team compassionately could help reduce workplace bullying and violence and other counterproductive aspects of the work environment. This also may help to increase responsiveness to cues of physician distress, improve working conditions overall, and reduce role strain.
- **Advocate for compassionate, confidential treatment of mental health and substance use disorders in physicians.** Cultures of fear and silence contribute to delayed use of supportive and rehabilitative services. Physician health programs (PHP) exist in all but four states and offer such services, but there is no standard on components and timing of the programs. This can lead to unnecessarily invasive and potentially non-evidence-based

surveillance and punishment if non-adherence is reported to a medical board by a PHP.

- **Advocate for sensible policies that reduce stigma for physicians and trainees.** For example, only one-third of state licensing boards comply with ADA requirements on their applications when they inquire about mental health disorders and substance use disorders.<sup>5</sup> Licensing applications should focus on current physician impairment, not on past treatment for such disorders, and should not be singled out from other chronic medical illnesses.
- **Evolve the landscape towards better understanding the unique cultural, organizational, and social factors that contribute to physician suicides.** Few published investigations reflect on physician suicide, for example, through qualitative interviews of peers' experiences after a colleague's death by suicide, or psychological autopsies to collect a comprehensive behavioral analysis after a physician's death.

Physician suicide cannot remain stigmatized and in the shadows. Honest and transparent dialogue is vital. Interventions specifically targeted towards suicide prevention among physicians should be discussed openly, frequently, and internationally.

While we highlighted opportunities for further work, some of which are being explored, more deaths of physicians, residents and students by suicide are happening in the interim. Aligned and co-occurring interdisciplinary efforts across advocacy, education, and research can continue to address high physician suicide rates. And collaborative and community-oriented behaviors can support a healthier, more transparent and supportive culture of medicine.

A physician's life may depend on it.

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# IMPLEMENTING A PROJECT-BASED, LONGITUDINAL MEDICAL EDUCATION TRACK TO TRAIN FUTURE ACADEMIC CLINICIAN-EDUCATORS

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There is increasing demand in academic medicine for physicians trained in medical education, and being an effective teacher is essential for physicians. However, a clinician-educator (CE) is distinct from a clinician-teacher, as educators oversee and design curricula, demonstrate leadership in educational initiatives, and engage in education scholarship. While many residency programs emphasize resident-as-teacher training, few offer CE training. Here we review literature on CE training in graduate medical education and describe the clinician-educator track (CET) in the Department of Medicine at the Icahn School of Medicine at Mount Sinai. We hope by sharing our experiences and challenges, others will implement their own CETs.

High faculty attrition and resident disinterest in academic medicine portend a future shortage of academic physicians.<sup>1</sup> In response, several residency programs involved residents in education training to develop scholars and leaders in medical education.<sup>2</sup> At the faculty level, CE promotion pathways are increasingly prevalent. Several programs have published on CETs, including:

- **University of Chicago: GME-wide CET started in 2014 including candidates from all residency programs, involving live interactive meetings, journal clubs, and conferences; web-based modules with discussion groups; and mentorship. All participants present a project poster.**<sup>3</sup>
- **Beth Israel Deaconess: Started in 2010 and limited to medicine residents. Begins in PGY1 year with seminars, enhanced teaching opportunities, and a longitudinal scholarly project.**<sup>4</sup>
- **Stanford: Started in 2010 in family medicine. Includes online modules, small group seminars, and a longitudinal scholarly project.**<sup>5</sup>

Our Medical Education Track is two years for PGY2 and -3 residents. It launched in 2015, open to all interested residents from the Mount Sinai Hospital Medicine residency program, and two cohorts have graduated. In 2016, we expanded to include Medicine programs at sister hospitals (Mount Sinai St. Luke's/Mount Sinai West and Mount Sinai Beth Israel) and Pediatrics residents at Mount Sinai, with PGY1 residents applying in the spring. We currently accept six residents from each Medicine program and two from Pediatrics, though these quotas are flexible.

The track is project based: all must design and implement an education project and submit worksheets every six months. The track involves seminars approximately six weeks apart. Several are dedicated to workshops where participants discuss projects and exchange ideas. PGY2 year is focused on curriculum design, and includes modules on educational theory, one's philosophy of education, needs assessment, goals/objectives, teaching strategies/methods, and educational scholarship. Our goal is that participants have well-defined projects by the end of PGY2 that can be implemented during PGY3. PGY3 curricular content focuses on advanced teaching skills, including microteaching along with workshops on ambulatory teaching, remediation, clinical reasoning, feedback, bedside teaching, and small group teaching.

A two-week Medical Education Elective was piloted in 2017-18 for select PGY3 participants to provide an opportunity to teach across a variety of settings and formats over two weeks, with observation and regular feedback by faculty. Numerous additional teaching opportunities are available to track members regardless of elective participation, including medical student small group and physical diagnosis teaching.

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Faculty members are drawn primarily from departments of Medicine, Pediatrics, Geriatrics, and Medical Education. All volunteer their time and have substantial experience and/or leadership roles in medical education. Residents are asked to identify a project mentor, who is often (but not always) one of the core track faculty.

Evening sessions allow most to attend and they are recorded so those with conflicts can stay current. Food is provided at seminars. Free cloud storage services are used to share information, articles, slides, and resources.

The track has been evaluated continuously with written evaluations completed for all modules, with overall session scores at least

4.5/5.0. We have high perceived resident satisfaction, and participants have enthusiastically encouraged interns to apply. In our pilot year, 9 PGY1 applied with steady increase in subsequent years to 31 for 2018-20. Other data include abstracts submitted to the Department of Medicine and institutional Medical Education Research Day (six most recently, including one award-winning abstract), institutional teaching awards for participants (multiple), external medical education conference attendance (multiple participants accepted to the Harvard Macy Post-Graduate Medical Education course in addition to education-focused meetings), and publications (several manuscripts currently in preparation).

There have been challenges. Every year, we receive more applicants than spots. It has been difficult to balance admitting anyone interested and keeping the group small, which we believe enhances the discussions and project workshops. Some participants report difficulty identifying an appropriate mentor outside of track leadership, and we have observed some select mentors with content expertise around their project, but little medical education expertise. Some have addressed this problem by using two mentors: one to assist in developing content, often faculty in the subspecialty of career interest, and one for guidance in improving the project's educational quality, often one of the track leaders. This has worked when the resident is proactive but has been difficult for less engaged residents.

In the coming year, we hope to address these challenges by further expanding. Leadership will also expand, and residents with projects in similar areas will be grouped into pods sharing an advisor. We hope the system will allow earlier mentor identification, as each participant will have more direct contact with track leaders. We also hope to facilitate peer mentorship, by asking PGY3 residents to mentor PGY2s. As we now have Chief Residents who completed the track, we have also involved them in teaching and mentoring participants.

While evening sessions have allowed most residents to attend most modules, the lack of dedicated weeks assigned to the track has challenged us to engage residents between sessions, as they often have competing priorities, including clinical work and research. While the current model allows participants to progress their project at their own pace, it requires self-directed and motivated learners. Nonetheless, we value preserving the ability of our participants to do clinical subspecialty rotations and pursue additional training and research during elective time.

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### **Reflections from recent participants in the Medical Education Track at the Icahn School of Medicine at Mount Sinai:**

“As an aspiring academic physician, I applied for the Medical Education Track at the Icahn School of Medicine Mount Sinai to further expand my knowledge in the fundamentals of medical education and curriculum development. My project focus was on developing and implementing a standardized internal medicine lecture curriculum that would cover the major topics included in the American Board of Internal Medicine. Participating in the track not only provided a framework to accomplish my scholarly project but also gave me the confidence to teach effectively as a resident during clinical rounds. Additionally, it boosted my curriculum vitae with scholarly accomplishments and was a principal topic of discussion during my fellowship interviews. I genuinely believe that participating in the track made me a unique and more competitive candidate, and provided the necessary tools to become an outstanding clinician educator.”

—Alvaro Ramos-Rodriguez, MD

“I did not know the difference between being a teacher and being an educator before being accepted to the Medical Education Track. I learned a lot about curriculum development, including how to accurately perform needs assessment, set up goals/objectives, and implement evaluations. I was able to launch a curriculum for medicine residents in my program, where they could learn about peer review via Mortality conferences. The medical education track helped me to map out what needs to happen in order to design the curriculum. Another strength of this track was having residents from different programs within the healthcare system. I was able to learn about the curricula of other programs and get feedback from various viewpoints, which helped me build a more effective project.”

—Misa Hyakutake, MD

# OCCAM'S RAZOR VERSUS HICKAM'S DICTUM: HEADACHE IN AN IMMUNOCOMPROMISED PATIENT

Carlton D. Scharman, MD (presenter); André M. Mansoor, MD, Avital Y. O'Glasser, MD, FACP, FHM (discussants)

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A 34-year-old man with a history of simultaneous pancreas-kidney transplant for Type I diabetes and associated nephropathy, requiring chronic immunosuppressive therapy with tacrolimus, prednisone, and mycophenolate, presented with acute onset headache and subjective confusion. Two weeks prior, he had been diagnosed with antibody-mediated kidney transplant rejection, undergoing first treatment of plasmapheresis and intravenous immunoglobulin (IVIG) several days prior to his acute presentation.

*We have a medically complex patient whose headache differential starts out broadly. We should immediately be concerned about infection causing meningitis, encephalitis, or meningoencephalitis given his chronic immunosuppression as well as recent acute rejection treatment. Bacterial, viral, or fungal infections are concerning. Medication adverse effect and intracranial bleed should also be considered early.*

On examination, his temperature was 37.8°C, and he was hypertensive to 183/107 mmHg with mild tachycardia. He was intermittently somnolent, agitated, and disoriented. Neck pain and stiffness were present.

*Meningitis due to infection remains high on the differential given his nuchal rigidity. His normal temperature does not exclude the possibility. His hypertension and chronic tacrolimus also raise concern for posterior reversible encephalopathy syndrome (PRES). His recent IVIG therapy could also cause an aseptic meningitis.*

He was started on empiric vancomycin and ceftriaxone for bacterial meningitis coverage; acyclovir was not empirically initiated. Urgent head CT was unremarkable. MRI was also subsequently unremarkable. Lumbar puncture (LP) was performed urgently as soon as the head CT showed no signs of impending herniation, although this was a difficult bedside procedure with multiple attempts needed to access the cerebrospinal fluid (CSF) space. The CSF initially appeared red in color. The intensity of the color did not lessen with subsequent sampling; vials one through four were identical in their dark red appearance.

*The stable CSF appearance between vials one and*

*four made trauma from needle insertion less likely, as this is typically associated with a bloody CSF appearance that lessens over time as fluid is collected. CSF appears cloudy with RBC concentrations between 500-6000 K/cu mm and begins to appear grossly bloody when the concentration exceeds 6,000 K/cu mm<sup>1</sup> (K/cu mm or K/mm<sup>3</sup> is equivalent to cells/ $\mu$ L.) The differential for grossly bloody CSF includes traumatic LP, subarachnoid haemorrhage, and hemorrhagic meningoencephalitis. SAH seems less likely here given negative imaging and absence of head trauma.*

Because of the association between HSV encephalitis with CSF erythrocytosis in combination with his immunosuppressed status, he was immediately started on empiric intravenous acyclovir. Subsequent CSF analysis revealed WBC count of 2,106 K/cu mm (76% neutrophils), RBC count of 42,000 K/cu mm, protein 249 mg/dL, and normal glucose relative to serum levels (64 mg/dL).

*In HSV encephalitis, CSF erythrocytosis occurs in approximately 80% of cases and is attributed to the necrotizing and hemorrhagic nature of the infection.<sup>1</sup> CSF HSV polymerase chain reaction (PCR) is associated with a sensitivity of 98% for detecting infection, but can be falsely negative in the setting of significant erythrocytosis due to presence of porphyrin (a heme-degradation product) which can interfere with the assay.<sup>2</sup> Therefore, in such a setting, negative PCR results should be interpreted with caution. Peripheral blood contamination of CSF after traumatic LP artificially increases WBC count. However, this CSF pleocytosis appears "real" as the proportion of CSF WBC to RBC is larger than the peripheral blood WBC/RBC ratio (see table on page 9).*

His CSF HSV-1 by PCR ultimately returned positive on hospital day 2, and he was continued on intravenous acyclovir with antibiotics discontinued. However, despite acyclovir, he experienced only minimal improvement in his headache severity before manifesting acute worsened headache and agitation with hypertension to 180/110s mmHg on hospital day 5. His delirium included the

*continued on page 9*

	Cerebrospinal Fluid	Peripheral Blood
WBC count (K/cu mm)	2,106	14,750
RBC count (K/cu mm)	42,000	4,600,000
WBC:RBC ratio	0.05	0.003

inability to recognize family members and paranoid delusions of dying (repeatedly stating “I feel like I’m going to die”).

*Our differential for this clinical setback includes inadequate CNS source control, superimposed bacterial meningitis given his difficult lumbar puncture, hypertensive emergency, PRES syndrome, new intracranial hemorrhage, and acyclovir-induced neurotoxicity. Acyclovir-induced neurotoxicity typically presents within 24-72 hours of drug initiation with neurologic manifestations such as tremor, myoclonus, delirium, agitation, lethargy, hallucinations, and extrapyramidal symptoms.<sup>3</sup> Visual hallucinations and death delusions, which interestingly*

*was one of the most striking features for this patient, are reported.<sup>4</sup>*

*Acyclovir-induced neurotoxicity can be challenging to identify, as it can be confused for worsening HSV encephalitis or meningoencephalitis. Most cases occur with renal impairment,<sup>5</sup> leading to accumulation of acyclovir and its metabolite 9-carboxymethoxymethylguanine (CMMG), which is believed to act at the blood-brain barrier by inhibiting transporter proteins and increasing susceptibility to uremic toxicity.<sup>5</sup> Our patient’s graft function had normalized by the time of this adverse event. AIN can be managed by drug withdrawal, hydration to increase excretion, and/or hemodialysis.<sup>6</sup> Most cases show improvement*

*within 5 days after drug withdrawal.*

His hypertension normalized with intravenous labetalol, and acyclovir was changed to intravenous ganciclovir with subsequent dramatic improvement. On hospital day 7, his mental status had returned to baseline with complete headache resolution. He was discharged on hospital day 9 and ultimately made a full recovery.

*Failure to consider AIN may lead to misinterpretation of neurological symptoms as worsening encephalitis, leading to inappropriate dose increases rather than reduction or withdrawal. This case highlights the importance of maintaining a broad differential diagnosis in immunocompromised patients presenting with headache. It also illustrates the importance of recognizing causes of persistent headache and neurologic decline in those on targeted therapy for HSV meningoencephalitis, including acyclovir-induced*

*continued on page 11*

## Boston University School of Medicine / Boston Medical Center— Associate Medical Director for Primary Care Transformation and Innovation

The Section of General Internal Medicine at Boston Medical Center is seeking an innovative and inspirational leader to join the Primary Care Leadership team as the Associate Medical Director for Primary Care Transformation and Innovation. This is a faculty position in the Department of Medicine and the Boston University School of Medicine.

This position will combine direct patient care with significant administrative time to lead change and quality improvement in key priority areas. The Associate Medical Director will work closely with the Medical Director to lead the efforts to drive changes in primary care as the hospital transforms into an Accountable Care Organization for the safety-net population. In partic-

ular, the Associate Medical Director will lead a multidisciplinary team in conceptualizing and implementing a care delivery model for complex and high-risk care management from the ground up. Successful applicants will have experience in change management, project implementation, process improvement, and managing diverse teams. This leader will serve on key quality and strategy committees, interact directly with Hospital and Department of Medicine leadership, and will have leadership development and mentorship opportunities tailored to the applicant’s interests. There will be an expectation of teaching and scholarship related to primary care quality and innovation work.

This is an exciting time to join General Internal Medicine and

make real impact. Boston Medical Center is committed to growing and strengthening Primary Care, and the Section has embarked on an effort to further transform our NCQA-certified patient centered medical home into a leading primary care practice with a focus on providing high-value, team-based care consistent with our mission for caring for Boston’s underserved.

Boston University is an Affirmative Action and Equal Opportunity Employer. Salary and faculty rank will be commensurate with prior experience and qualifications. Interested candidates—please send a cover letter and CV via email to Jeffrey Samet, Section Chief of General Internal Medicine: [jsamet@bu.edu](mailto:jsamet@bu.edu)

# IS USING MOBILE HEALTH ALONE SUFFICIENT TO ENHANCE PATIENT ACTIVATION AND MEDICATION ADHERENCE?

Adesuwa Olomu, MD, MS; Karen Kelly-Blake, Ph.D.; William Hart-Davidson, Ph.D.; Margaret Holmes-Rovner, Ph.D.

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Mobile health interventions (apps, notifications, and/or text messaging delivered via mobile phones) hold promise to improve health care delivery. These mHealth interventions are attractive because: 1) they are relatively inexpensive; 2) 95% of Americans own mobile phones and 77% own Smartphones, and 3) there are opportunities for automation in the way messages are sent and monitored which could further lower the costs associated with providing care. But, there is a problem. Implementation studies are beginning to show that mHealth interventions may not be enough, on their own, to improve patient health outcomes. Our own results that are part of this growing literature lead us to ask why mHealth technology may not be as transformative as anticipated, especially in managing chronic disease.

Studies that include clinical outcomes, as well as knowledge and attitudes are particularly revealing. The MediSAFE-BP trial by Morawski et. al. (2018) found no change in systolic blood pressure levels among patients with poorly controlled blood pressure (N=411) who were randomly assigned to use a mobile app as part of a medication adherence intervention as compared to those who did not use the application. Use of the app did correlate with a small increase in self-reported medication adherence, but this did not translate to a significant difference in blood pressure control.<sup>1</sup> A recent AHRQ review to evaluate efficacy, usability, and features of commercially available mobile apps for diabetic self-management found that of the 11 apps studied, only 5 were associated with clinically significant improvements in HbA1c. None of the studies showed patient improvements in quality of life, blood pressure, weight, or body mass index. Moreover, none of the included studies was considered high quality.<sup>2</sup>

In our own recent pilot study, aimed at improving cardiovascular (CVD) care for diabetic patients, we found a similar result: a text-messaging intervention

alone did not produce improved patient activation, better self-management and better medication adherence in diabetic patients. Our text messaging intervention included: 1) teaching patients to send and receive educational text messages; 2) sending daily messages appropriate to their diagnosis and medications for 14 weeks, along with appointment reminders; and 3) monitoring patient responses to prompts and contacts with their providers. Our intervention comparison arm paired the text-messaging service with a patient-provider intervention, the Office-Guidelines Applied to Practice (Office-GAP) Program. Embedding the text-messaging intervention in the patient-provider activation intervention proved more successful than the texting service alone.

We found that from baseline to four months follow up, patient activation scores as measured by the patient activation measure (PAM) increased by 9.08 on average for combined group (p-value 0.04), while in the texting only group, the PAM score decreased by 5.89 on average (P-value=0.52). In addition, we found that combining texting with Office-GAP significantly improved adherence to refills and medications over time compared to the text-messaging service alone (P-value=0.05). Results described at the SGIM Annual Meeting 2018, April 12 & 13 in Denver, CO, showed that the approach in the intervention arm positions the mHealth intervention in a way that is subtle but important.<sup>3</sup> It does not replace interactions with providers nor does it serve as a supplement to patients' knowledge or motivation. Instead, it is a simple reminder of the care plan agreements that were arrived at in interactions between patients and providers. It is, in a word: *feedback*. In the text-message service alone arm, the mHealth intervention itself was expected to produce change in patient knowledge and behavior. We propose that the feedback function may provide an important clue to a reproducible mechanism for effective and efficient use of mHealth interventions.

*continued on page 11*

**Connecting Three Critical Steps in Chronic Care: Coordination, Shared Decisions, and Self-Management in a Feedback Loop**

The key steps to the Office GAP intervention apply guidelines to care by provider training, coordination with patients in a moment of real time shared decision-making (SDM), then reinforcement via mHealth and self-management. This creates a positive feedback loop that reinforces evidence-based care.<sup>4</sup>

**The Office-GAP intervention: Getting Providers and Patients on the Same Page**

Unlike the stand-alone mHealth interventions, Office-GAP trains patients and providers in shared decision making. The Office-GAP intervention described here included: 1) a patient activation group visit; 2) provider training; and 3) a decision support checklist used in real time in the office in two provider visits. The checklist is a one-page checklist that outlines all evidence-based medications for secondary prevention of CVD in patients with diabetes. In our previous study, Office-GAP was shown to improve blood pressure control.<sup>5</sup> The combination of Office-GAP + mHealth implements mHealth in the mode

of a positive feedback loop. Our goal is to use mHealth to close the loop, providing active reinforcement of the care plan. This is a more narrow and appropriate use of the technology.

**Conclusion:** Text-messaging alone is insufficient. Our study suggests that combining the Office-GAP and mHealth was more effective than mHealth alone, as measured by improved patient activation and medication use, and possibly health outcomes. We appreciate the attraction of using mobile health applications alone because they promise cost savings, efficiency, and maybe even greater accessibility. However, none of those benefits matter if they do not change health outcomes. Our results suggest that the promise of mHealth interventions may lie in using it as a feedback mechanism to support patient activation and shared decision-making in clinical practice. Expecting mHealth applications to function as a technology to change patient behavior situates mHealth in earlier behaviorist approaches. We suggest that the feedback function can be a critical use of the new technology to sustain the gains that have been shown in shared decision making interventions over longer intervals.

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**MORNING REPORT** (continued from page 9)

neurotoxicity. The opposing philosophies of Occam’s Razor (strive to find the fewest possible causes to explain a patient’s presentation) and Hickam’s Dictum (patients can have multiple diagnoses simultaneously) can apply to the challenging scenario of headache in an immunocompromised patient, especially if the headache and neurologic decline continue after targeted treatment is begun.

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Annual Planning Retreat in June to review and revise our vision, mission, and values statement, then worked diligently on aligning proposed activities, programs, and initiatives with priorities deemed most important to our mission and vision.

Beginning this spring, Eric Bass, our CEO, guided Council members and staff through a comprehensive and iterative process that allowed us to collectively review and revise our mission, vision, and values statement. The process involved drafts developed by a group of Council members, followed by several rounds of review by the full Council. The Council made its last set of changes after receiving constructive comments from SGIM committee and commission chairs who reviewed a preliminary version. Our goal was to make changes so the statement would be a more effective tool for communicating about the essence of why all of us are SGIM members—our commitment to our patients and communities. Although we wanted a crisp memorable statement of our mission followed by an equally crisp statement of our vision, it was not possible to capture the full complexity of our aspirations in two short sentences. We therefore decided to include a listing of our core values along with a brief description of who we are and what we do as an organization, to provide important context. The results of our efforts appear as follows.

#### What Is Our Mission?

- To be the professional home for innovators and scholars in academic general internal medicine leading the way to better health for everyone.

#### What Is Our Vision?

- A just system of care in which all people can achieve optimal health.

#### What Do We Value?

- High-value, evidence-based, person-centered, and community-oriented health care

- Attention to population health outcomes and their social determinants
- Excellence, innovation, and leadership in education, research, and clinical practice
- Interdisciplinary collaboration and team-based care
- Collegiality, mentorship, and career development
- Diversity, equity, and inclusion

#### Who Are We?

- SGIM is a diverse community of talented people in academic general internal medicine who are passionately committed to improving health through research, education, and advocacy.

#### What Do We Do?

- We provide a forum and resources for our members to learn, teach, share ideas, disseminate work, and develop successful careers. We support and grow innovators and scholars who advance clinical practice, education, and research across all settings, including primary care and hospital medicine, with the common goals of eliminating health disparities and achieving the healthiest lives for all people.

We believe this statement of identity and purpose will help us focus on the important work needed to be done to achieve our vision of a just health system in the context of the current volatile, uncertain, complex, and ambiguous environment.

In addition, during the June retreat we revisited the six strategic priorities first articulated several years ago with the goal of refining and consolidating them to three or four, adding more specificity and clarity, and creating an alignment with our revised mission, vision, and values.

Four major organizational goals emerged from this process:

1. Foster the development of future

leaders in academic general internal medicine;

2. Promote high-value, evidence-based, person-centered, population-oriented approaches to improving health;
3. Advocate for our vision of a just health system that brings optimal health for all people; and
4. Ensure SGIM financial health and employee wellness.

Over the coming months, we will develop a series of tactics and metrics for activities related to these four goals, so we can chart our path as an organization. Additionally, we will engage in an ongoing strategic planning process to ensure the long-term health and influence of SGIM so it is better able to serve our members and pursue opportunities that keep us at the cutting edge of issues facing general internal medicine.

In subsequent *Forum* columns and electronic communications, we will be sharing more with you about the work Council and Staff are undertaking during SGIM's sabbatical year.

We look forward to hearing your thoughts and feedback as we work collectively to rejuvenate SGIM! **SGIM**



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Additionally, “standing orders” that allow individuals to obtain naloxone without a prescription exist in most states.

**Syringe services programs (SSP)** were established in the 1980s in response to the HIV epidemic with the goal of providing access to and encouraging use of sterile injection supplies (e.g., needles, syringes, cotton, sterile water). SSPs have been shown to reduce HIV and Hepatitis C virus transmission and high-risk injection behaviors such as syringe sharing.<sup>2</sup> Despite clinical concerns about “risk compensation,” high-quality randomized controlled trial evidence also demonstrates that participants of SSPs do not increase injection frequency. As of 2015, there were 228 SSPs in the United States. Federal law currently gives states and local communities, under limited circumstances, the opportunity to use federal funds to support certain components of SSPs while prohibiting use of federal funds from being used to purchase sterile needles or syringes.

**Supervised injection facilities (SIF)** are legally sanctioned facilities where people who use intravenous drugs can inject pre-obtained drugs under supervision. Typically, facilities have well-lit stalls, sterile injection equipment, and staff who can respond to overdose or other emergencies. Services may also include assessment and referral to primary health care, addiction treatment or other social services; and exchange of needles. Evidence from cohort and modeling studies suggests that SIFs are associated with lower overdose mortality (88 fewer overdose deaths per 100,000 person-years), 67% fewer ambulance calls for overdoses, and a decrease in HIV infections. Effects on hospitalizations are unknown.<sup>3</sup> No SIFs currently exist in the United States. Several cities, including Philadelphia, New York City, and San Francisco, are moving forward with plans to open SIFs though these efforts will require navigation of

local, state and federal regulations.

**Low threshold buprenorphine access** refers to relaxing criteria and expectations for a patient to be treated with buprenorphine for opioid use disorder (OUD) with a goal of engaging patients who may otherwise not receive care. Higher threshold approaches to buprenorphine treatment can impose barriers to care by setting rules about patient selection (e.g., excluding patients who use benzodiazepines), participation in psychosocial treatments, or frequency of monitoring (e.g., requiring daily medication pick-up). In a prospective study of a low threshold buprenorphine program in New York City, rates of retention and induction-related adverse events were consistent with prior studies of office-based treatment.<sup>4</sup> Barriers exist to implementing low threshold buprenorphine access. To prescribe buprenorphine, clinicians must complete 8-24 hours of training and confirm their capacity to refer patients for counseling and other services. Prescribers must adhere to patient limits and specific federal record keeping requirements. Some Medicaid programs require frequent urine drug testing and participation in psychosocial treatment.

**Fentanyl testing** allows individuals to test a substance prior to use to determine whether it contains the highly potent synthetic opioid. As of November 2017, past year overdose deaths involving synthetic opioids such as fentanyl more than doubled to nearly 28,000; deaths due to synthetic opioids are now the most common cause of drug overdose. Studies have shown that individuals who use drugs report willingness to use test strips.<sup>5</sup> However, no test strip is approved by the Food and Drug Administration, and test quality may vary. We are not aware of studies of the impact of fentanyl test use on subsequent substance use or risk of overdose. Recent legislation in Rhode Island and Maryland

has legalized the possession of fentanyl testing strips, which may be considered drug paraphernalia. In California, funding has been made available by the state public health department to provide test strips at the state’s syringe exchange program.

Clearly, there is tremendous variation in the current status of each harm reduction strategy. For general internists interested in incorporating harm reduction into their practice or improving access to these strategies in their community, efforts should focus on implementation of practices that are relatively mainstream (i.e., naloxone), advocacy when policy does not reflect the state of the evidence, and research when additional evidence is needed. These efforts must be tailored to the individual strategy and its context. For example, advocates of supervised injection facilities in several U.S. cities must engage their local communities to identify the neighborhoods (or the specific neighborhoods) where pilot sites will be located. On a broader scale, several harm reduction strategies will require legislation at the state and federal level to remove barriers to expansion. For example, expansion of low threshold buprenorphine will remain challenging until lawmakers change state-specific Medicaid policy (e.g., prior authorization, mandatory urine testing) or federal regulations on patient limits for individual buprenorphine prescribers.

Across all strategies and settings, a harm reduction approach seeks to end the stigma that can prevent people who use drugs from seeking care. Terms such as *addict* or *drug-seeker* can reinforce stereotypes or negative feelings about patients and perpetuate this stigma. Person-first language, such as *person who injects drugs*, and appropriate diagnostic terms, such as *opioid use disorder*, are essential for maintaining a professional, patient-centered dynamic.

General internists care for pa-

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tients with substance use disorders and see the harms of both substance use and of the complications that are more likely when that substance use is stigmatized. As clinicians, educators and researchers, general internists seek to identify and address the underlying conditions that led to the current drug overdose crisis. We must also advocate for improved access to harm reduction strategies so that our patients live to see those conditions improve.

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Furthermore, a model where elective blocks were dedicated to the track would severely limit the number of participants, as only a small number of residents can be on elective at one time.

Overall, the medical education track at our institution has been popular, and has resulted in projects that have enhanced our training program and graduated physicians who are well poised to become future leaders in medical education. We hope that programs such as this will become more widespread for the benefit of future medical trainees.

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ence before it occurred. I, like many physicians in leadership positions, conduct myself in the way that I observed my own mentors—gen med icons like Wishwa Kapoor and Rick Lofgren, as well as my current SGIM colleagues. What I now recognized was that I have transcended the simple mirroring of the leadership styles of my mentors and colleagues and now have my own unique style that my medical student will in turn take and assimilate as part of his style. I found that to be a pretty exciting revelation, but also a great responsibility. I spend a significant part of my time thinking about and creating opportunities to promote primary care general internal medicine and academic medicine as career paths.

In this month's President's column, Drs. Corbie-Smith and Bass highlight the four major organizational goals that emerged from Council's recent visioning process.

The first, to foster the development of future leaders in academic general internal medicine, fits in perfectly with what I am describing. The Klar program, although not specifically a general internal medicine program, gave me another venue to promote a career that I have found most rewarding and influence future generations of physicians.

I was paired with an outstanding medical student and all around remarkable person. Marcel is a second-year student interested in strengthening community partnerships, and he already has demonstrated a very distinct SGIM quality of giving back by establishing a middle school mentorship program whereby Zucker Medical Students review topics on wellness and health. This is one of those situations where the roles of teacher and student are often blurred and depending on the situation, interchangeable. I

learned as much about my style and approach to leadership and how I handled my role as Division Chief, mentor, advocate, and coach as he learned about "what a division chief does?"

This month's *Forum* also features articles that reflect issues being faced by generalist faculty and leaders every day. Colin Feuille and colleagues describe a well designed and experientially based track to train future academic clinician educators. Tiffany Leung and her colleagues shine a light on the important topic of physician suicide and offer some actionable points to address the issue. Articles on health IT, harm reduction regarding the opiate crisis, and another outstanding morning report make the September issue another great read.

Enjoy!!

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## Research Faculty Position Division Of General Medicine



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The Division of General Medicine at Boston's Beth Israel Deaconess Medical Center (BIDMC, major teaching affiliate of Harvard Medical School), seeks junior and mid-career/senior research faculty. The Division is home to the Sections of Primary Care and Hospital Medicine, with research focusing on improving the health of vulnerable populations and those with chronic conditions, fostering patient-centered care, improving clinical decision making, and developing, implementing, and testing innovations in primary care and hospital medicine. Eighteen M.D. and Ph.D. investigators conduct research, seek external funding, and provide mentoring within Harvard's general medicine and integrative medicine fellowships.

**JUNIOR POSITION**—For junior positions, we seek to grow depth in established research areas as listed above. The Section for Research takes particular pride in our mentoring of junior faculty members; most senior faculty are recipients of individual awards for excellence in mentoring, and our Section has been recognized with Harvard Medical School's Program Award for a Culture of Excellence in Mentoring.

**MID-CAREER/SENIOR POSITION**—The successful applicant will be prepared to lead a new research program within the Division, garner significant external research funding, and mentor fellows and junior faculty members within his/her area of expertise. Resources will be available to establish a research program, including potential recruitment of additional faculty or fellows. We seek to grow breadth in our present lines of inquiry, and therefore welcome investigators focused on new topics relevant to general medicine. Such topics include (but are not limited to) health disparities, healthcare policy and organization, and substance use disorders.

M.D. and/or Ph.D. required, with general medicine (including hospital medicine) research interests. M.D.s practice in BIDMC's faculty inpatient and outpatient settings. Under-represented minorities, women, and persons with disabilities encouraged to apply. EEO/AA/M/F/Vet/Disability. Please apply by going to <https://hmfphysicians.org/>. Please enter 171454 in keyword search to locate the job posting to apply.

**Boston University School of Medicine / Boston Medical Center—  
 Medical Director for Primary Care**

The Section of General Internal Medicine at Boston Medical Center and Boston University School of Medicine is seeking an innovative and inspirational faculty leader to serve as Medical Director for Primary Care, providing overall leadership responsibility for Primary Care Operations, Transformation and Innovation.

Working with an Associate Medical Director, Administrative Director and Clinic Operation Managers, the Director has responsibility for Primary Care operations, transformation, and innovation. The Director will have important roles in ensuring the success of our very exciting Medicaid Accountable Care Organization as well leading our primary care clinicians to continue to excel in all aspects of high value, patient-centered care. The primary care practice in the Section of General Internal Medicine has 70 faculty and responsibility for approximate 38,000 patients. In addition, the practice has critically important specialized pro-

grams in Office-Based-Addiction-Treatment (e.g., buprenorphine), Women's Health, Refugee Health, patient navigator programs, Care Coordinator program, Clinical Pharmacist Program, and TOPCARE for safe opioid prescribing.

The Primary Care Medical Director will oversee Practice Team and Leadership Development by creating a culture of continuous performance improvement, responsible stewardship of resources, and career development of our talented clinical faculty. The Director will also have an important role in ensuring that the primary care practice facilitates effective educational environment for our students, residents, and fellows in primary care. The Director will report to the Chief, Section of General Internal Medicine and the Vice Chair for Clinical Affairs in the Department of Medicine, and will be expected to work collaboratively with the BMC leadership team in formulating strategic plans for the practice.

This is an exciting time to join the Section of General Internal Medicine at New England's largest safety-net hospital and make a real impact. The Section is comprised of a diverse, energetic and committed group of Primary Care Faculty Members. Boston Medical Center is committed to growing and strengthening Primary Care, and the Section of General Internal Medicine has embarked on an effort to further transform our NCQA-certified patient centered medical home into a leading primary care practice with a focus on providing high-value, team-based care consistent with our mission for caring for Boston's underserved.

Boston University is an Affirmative Action and Equal Opportunity Employer. Salary and faculty rank will be commensurate with prior experience and qualifications. Interested candidates - please send a cover letter and CV via email to Jeffrey Samet, Section Chief of General Internal Medicine: jsamet@bu.edu

**Academic Primary Care Positions at Beth Israel  
 Deaconess Medical Center in Boston**

The Division of General Medicine and Primary Care at Beth Israel Deaconess Medical Center, a teaching hospital of Harvard Medical School, seeks highly motivated board eligible and certified internists to join our hospital-based, academic primary care practice. We are an NCQA certified level III patient-centered medical home, with a strong track record of high quality, innovative patient care, excellent population-health tools and an abiding commitment to excellence in teaching, research, quality improvement and work-life balance. Our practice delivers team-based care with integrated on-site support from mental health providers, as

well as anticoagulation, HIV, diabetes, hypertension and substance use disorder management services. Residents and Harvard medical students are integrated into the overall practice and team structure, and we have a cutting edge primary care residency program. A Harvard appointment will be offered commensurate with academic qualifications. We offer a highly-competitive salary, incentives closely aligned to the diverse mix of elements required in providing quality care and a generous benefits program.

Candidates should visit <http://www.hmfphysicians.org/careers>, create an account, use the

search term "Academic Primary Care Physician," and apply to requisition # 171439. Primary care physicians are employed by Harvard Medical Faculty Physicians (HMFP), the faculty practice plan for all physicians at Beth Israel Deaconess Medical Center, Inc.

We are an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability status, protected veteran status, or any other characteristic protected by law.