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THE OBESITY EPIDEMIC

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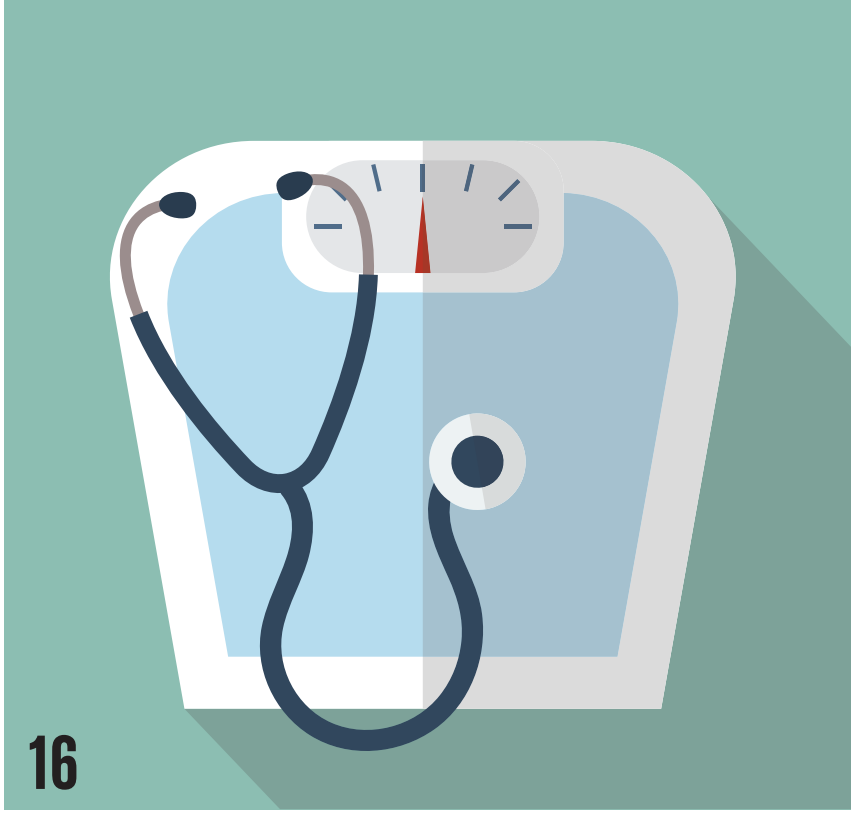
Virtually every physician encounters overweight and obese patients—from children to seniors. With increasing numbers of obese individuals, physicians and healthcare systems have had to make accommodations to facilities and look for new ways to treat this seemingly intractable disease. Articles start on page 16.



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You can earn .25 CME credits by reading the article on vaping and mental illness in this issue of Minnesota Medicine *and then responding to a series of questions online. The article begins on page 41.*

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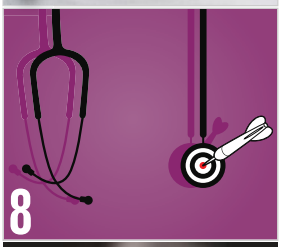

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Zeke J. McKinney, MD, MHI, MPH

Shifting the culture of working while ill

My whole family recently woke up a bit ill, most of us feeling fatigued with a mild cough and some nasal congestion. My partner and I opted to keep everyone home—our two younger kids from preschool and kindergarten and me from clinic—for the day and to seek COVID-19 testing. But it made me think about the fact that it was probably the first time I stayed home from clinic in several years.

Only now, during a global pandemic, when distancing is highly encouraged, is staying home from work even acceptable for many workers, especially for those of us in healthcare, as many jobs penalize individuals for calling in sick. For many workers, staying home when ill is not an option; they have to work to get paid and they have to get paid to meet their budget.

This likely is not the case for most physicians, but they worry about increasing the workload for colleagues who may have to cover with some of their patients, or for patients who will have to be rescheduled.

For my environmental toxicology and complex workers' compensation practice, scheduling is filled four to eight weeks in advance and there is no one else in Minnesota to cover my absence; my staying home because I'm ill can mean patient dissatisfaction with access or my trying to schedule an "extra" clinic day some other time in the near future.

Should it take a global pandemic for a physician to feel comfortable staying home when sick? (Hint: the answer is no.)

Healthcare as a business is funded by physicians seeing patients. Ensuring that physicians see as many patients in as little time as possible has exacerbated our cultural problem of working while ill.

Despite ill workers not working at their optimal level—this is called "presenteeism"—in an infectious disease context, we also shouldn't risk making our patients or colleagues ill as well.

The appropriate mechanism for addressing physician presenteeism because of illness is preventive rather than reactive. For the present pandemic, vaccination is the most critical step to mitigate the spread of illness, but what about more broadly?

For clinical settings where patients cannot be rescheduled (such as inpatients), we can include on-call replacement physician coverage as part of normal duties and for which someone can be at least partially paid. In outpatient settings where patients can return at a later date, we can provide "make-up" clinic days periodically to account for when a physician cannot be available.

We do not want a world where everyone stays home from work frequently, but we can achieve a better balance than currently exists.

With that more balanced world, being sick could be a time where one could rest and recuperate, rather than one with increasing anxiety about having to catch up on an overflowing workload once back at work. Even though I ended up staying home, not feeling well, I thought I needed to work quite a bit remotely to mitigate this concern.

We must use the lessons of the present pandemic to reorient our working culture to one that optimally promotes health rather than poorly responds when illness arises. **MM**

Zeke J. McKinney, MD, MHI, MPH, is the chief medical editor of *Minnesota Medicine*.

Call for submissions

Attention medical students, residents and fellows.

***Minnesota Medicine* is seeking to highlight the work of Minnesota medical trainees. The journal will publish select abstracts of original research and clinical vignettes in the September/October 2021 issue.**

Submissions will be evaluated by a panel of reviewers from a variety of disciplines; they will select those demonstrating appropriate quality for publication.

Some of those whose submissions are published also will be invited to present their work as virtual posters at the MMA's 2021 Annual Conference, September 24, 2021.

Criteria: Submissions should be no longer than 500 words plus references. Research abstracts should include a brief description of the research problem, methodology, results and a discussion of the findings. Clinical vignettes should include a description of the case, the diagnosis and treatment approach, and a discussion of the implications of the case.

Deadline for submission

May 31, 2021

Submit your abstracts and vignettes at **mnmed.org/abstracts**

Questions? Contact Linda Picone at lpicone@mnmed.org

The sum of our parts

BY RANVEER M.S. VASDEV

The clock flashed 4:30am in bright red lettering. He blindly felt for his frameless glasses, put them on and took a deep breath. With a familiar difficulty, he angled his legs over the edge of the mattress, shifted his 86-year-old frame to sit, and rubbed his sore wrists. He paused, sitting for minutes in the silence of the early morning. With effort, he pushed on his thighs to stand and shuffled towards the bathroom.

Once-simple tasks, like getting out of bed, took far longer than they used to. My grandfather, Jagmohan, or as I called him, "Grandad," embodied the progressive nature of aging. His joints ached. His vision blurred. His strength faded. Day by day, Grandad was dying, and his body kept score. Still, Grandad understood death's eventuality better than most.

At 15 years old, he and his family were refugees of the 1947 India-Pakistan Partition. In his hometown of Parachinar, Pakistan, Grandad personally witnessed childhood friends and neighbors murdered in the streets amid citywide riots. Fearing the same fate, he and his family purchased tickets to leave the city by train. As a government employee, Grandad's father was granted a last-minute opportunity to leave by plane. After boarding the plane, Grandad sat in its barren cargo hold, sandwiched between overzealously packed suitcases. His turban, stuffed with his mother's jewelry, rested against the window colored by the soft orange glow of distant fires. That night, Grandad barely escaped with his life. As it turned out, those who fled by train were massacred. Eyewitnesses described the carnage as horrific, with blood-soaked passenger carriages and bodies littered across the tracks.

No stranger to his own mortality, Grandad welcomed death as an old friend. Over the years, we talked openly about the subject. When asked if he was afraid of dying, he smiled gently, reached out for my hand, and said, "I've had a full life. When it's time, it's time."

One of the great joys in Grandad's last year of life was my decision to apply to medical school. A retired mechanical engineer who could speak 11 languages, he held education in high regard. Throughout his childhood, he studied every night under gas-lit streetlights and dreamed of attending medical school himself. However, his family could not afford it. This did not prevent him from becoming a lifelong learner. Grandad was a voracious reader, a talented stock trader and an admirer of Urdu poetry. Given his childhood aspirations and passion for knowledge, my admission to medical school filled him with pride.

Grandad's health significantly declined in the months before his death. He suffered from atrial fibrillation, mitral regurgitation and heart failure. His hospital visits grew more frequent and faint crackles were heard in both lungs. But, as fluid leaked into his alveoli, Grandad's heart overflowed with love. He loved to eat sliced cucumbers from the garden, topped with freshly cracked black pepper. He loved to sing along to Bollywood films, skipping over the words he had once known by heart. Above all else, he loved his family.

Grandad's love for his family was unconditional. It was a love known only by those who had struggled their entire lives. His expression of love ranged from slicing mangos for his grandchildren to paying for part of my college tuition. It was a love that made my memories of him enduring—sitting on his shoulders as a child while he watched the news, learning stock trading fundamentals from him on Sunday mornings and holding his hand after his mitral stent surgery. It was a love shared between grandchildren and grandparents. A love greater than the sum of its parts.

Weeks before his death, Grandad grew increasingly excited for my White Coat Ceremony. During a visit with his primary care provider, he said, "I don't care what you do to me! Give me any drug, do any surgery. I need to see my grandkid's White Coat." Perhaps, the excitement proved too much for Grandad's heart. Perhaps, it was just his time. Grandad died 11 days before the ceremony.

As my family grieved and prepared for his funeral the following week, I sat down to write his obituary, but was at a loss for words. How do you summarize a Grandad's life—and all that he endured—in just four paragraphs? How do we measure life at all? I could not grasp such a sublime but fragile concept, and yet my understanding of life and living would quickly change.

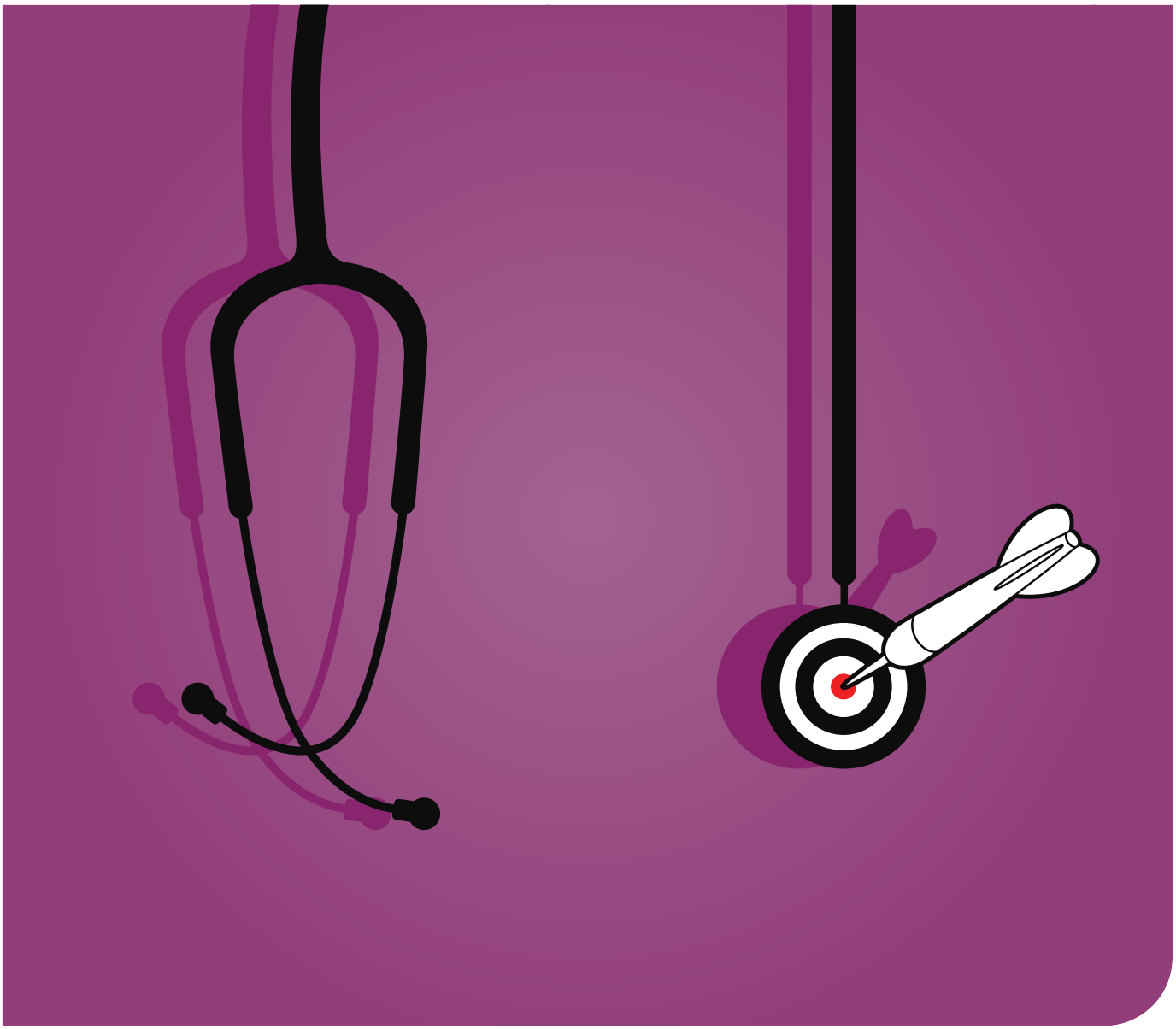
Medical school presented a quantitative framework to understand our body's composition. Cadaver dissections, biochemical signaling pathways and glass histology slides revealed that we are a concert of anatomical architecture and molecular constellations that will both grow and decay. After much formaldehyde, many multicolored pens and several hours on the microscope, I initially believed that we are the sum of our parts: a mere collection of organs, tendons, cells, etc. Yet, my grandfather exemplified that we are so much more. Grandad was not just an 86-year-old diabetic male with decompensated heart failure and an extensive cardiovascular surgical history. He was a survivor of religious persecution, a dedicated student and a champion of altruism.

This perspective is shared with the Hippocratic oath that Grandad never had the chance to hear. A modern adaptation reads, "I will remember that I do not treat a fever chart, a cancerous growth, but a sick human being." With this perspective, completion of my preclinical years and more than two years since Grandad's death, I can answer the questions once posed by his obituary. The measure of human life is non-discrete, precious and, most importantly, derived from our connections with others. These connections are everywhere. They are at yearly holiday family dinners. They are in the initial seconds of a trauma admit. They are exchanges of stories. They are in long-anticipated hospice care discussions. They are born in the first few moments of life, and they are cherished in its last. In all of these moments, our existence has value not because of how we spend our time, but who we share it with.

One of the great joys in Grandad's last year of life was my decision to apply to medical school. A retired mechanical engineer who could speak 11 languages, he held education in high regard. Throughout his childhood, he studied every night under gas-lit streetlights and dreamed of attending medical school himself.

Two days before the White Coat Ceremony, I looked admiringly at Grandad as he lay in his casket. He looked peaceful: his arms at rest, shoes freshly polished, black suit ironed and maroon turban wrapped around his head. The slight bulge in his left lapel reminded us of his pacemaker, and all that his heart endured. Holding Grandad's hand one last time reminded me of the loving man before me. It was the same hand that frantically packed canvas suitcases amidst the sounds of riots and gunfire. The same hand that placed a ring on my grandmother's. The same hand that lifted me onto his shoulders to watch the news. The same hand that cut mangos, that pointed out trending stocks, that held mine when asked if he was afraid of dying only to say, "When it's time, it's time." I was wrong. Grandad welcomed death's eventuality, not because of his childhood experiences, but because he lived a full life, saturated with meaningful and loving relationships with his family. Because of you, Grandad, I know that the human experience is a celebration of our interactions and we are far, far greater than the sum of our parts. **MM**

Ranveer M.S. Vasdev is a third-year medical student at the University of Minnesota Medical School, Twin Cities.



How clinical documentation integrity and coaching pulled me out of burnout

BY NATALIA DORF-BIDERMAN, MD

I know this will likely not be the first article you read about burnout, but it might be the first one you read about how a career in operations, clinical documentation integrity (CDI) and coaching helped a physician love her career again.

I had always wanted to be a doctor. The kind of calling that starts when you are in kindergarten. So, I followed my passion across the globe even after moving to the United States with my new husband. After years of USMLE test-taking and another residency under my belt, I became a hospitalist—and loved it. I loved every minute of it … until I didn't. Little did I know then that after years of personal work, learning

about burnout and the science of wellness and getting curious about myself and my career, I would be loving most of it again.

You don't need to get deep in the well of sorrow and despair to start actively pursuing change. I recognized I was not in a place of complete emotional exhaustion, depersonalization or cynicism but somewhere right before that. It wasn't a "sudden breaking with everything I had loved before," it was more of a slow sense of "something has to change."

To say that CDI had always been a passion would be a misrepresentation. The truth is, I fell into it. I had been in hospital medicine operations leadership when I was asked to lead this work within our department. At the time, I did not imagine that years later, I would credit my involvement with many of these aspects of healthcare delivery with reigniting my passion for patient care. I was experienced in hospital operations, and as I became more proficient in claims-based data analytics and quality reporting, I further understood our healthcare ecosystem.

As I lead this work in my campus, I am now in a position to impact the inefficiencies that create friction on the system and lead change for and with my colleagues. I can also help teams and individual clinicians improve their efficiency around documentation, and reporting that, ultimately, improves their experience at work. Unexpectedly, the motivation and interest of this kind of work beyond the bedside has spilled over to my experience with patient care and I feel re-invigorated and re-connected.

I didn't have to change my specialty or my organization or to leave medicine to make this happen. The way I traversed this part of my road to well-being was with peer and leadership coaching. Engaging with a trained coach offers you an opportunity to see the tremendous power we all inherently have to thrive in most situations. With focused time exploring my circumstances over the years and a framework to help me navigate my options, I could review and rewrite my place in my career. It gave me the opportunity to understand what brings me meaning and purpose and how to achieve it. Peer coaching is not only for the distressed, ready-to-leave, in-trouble clinician. It is also for those who are doing an okay job, productive and handling things, but who want a richer experience.

> "My work on caregiver well-being has demonstrated that one constant thing for many who are struggling is the sense of loss of autonomy."
>
> Natalia Dorf-Biderman, MD

There's been a lot of writing on how burnout and well-being are our system's issue; it's absolutely true. This means the problem has many different facets, including technology and tools, policies and regulations, incentives in the payment and reporting systems, leadership and our opportunities to make human connections.

The challenge with this approach to burnout as the only approach for us as individuals, the people who work in clinics, hospital units, in small or big teams, is that we give away the agency of our thriving. Our technology, policies and regulations need to change and to improve, but this will take time—and it certainly won't happen this week or this month. But there are many things we can do for ourselves.

As individuals and teams, in addition to working on and advocating for the kind of change we need in the system, we also can work on things that will make our days better right now, things we have some influence or control over. My work on caregiver well-being has demonstrated that one constant thing for many who are struggling is the sense of loss of autonomy.

If you look at all the models of impact on physician well-being, there is usually not one thing that changes our experience, it is the sum of small—and sometimes big—incremental changes that significantly affect our lives.

What has made my life abundant in these last several years is owning my story, becoming a change agent for myself and not allowing external circumstances to define my experience. I connect with the deep knowing that I have the answers for possibly unprecedented ways to move forward.

Do I love and enjoy every single thing about my career now? Certainly not, but I am in a dramatically different place than a few years ago and I'm genuinely thriving. This kind of change is available to all of us. We can all find some degree or some areas of autonomy in our lives and careers. Finding a way to reconnect with your agency and exercising it is the path to reclaiming the sense of joy, meaning and purpose of medicine. **MM**

Natalia Dorf-Biderman, MD, is a hospitalist at Methodist Hospital, St. Louis Park. She is the CDI medical director and the Staff Wellbeing Committee chair.

Supervised injection sites
Should physicians participate?

Is it ethical for a physician to take part in the creation and implementation of a supervised injection site (SIS) for those addicted to illegal drugs, intended to reduce harm from substance use?

YES

Both individuals and society benefit

Supervised injection sites/facilities (SIS/SIF), first sanctioned in Switzerland in 1984, raise many questions about patient safety, public health and moral and ethical obligations, as well as limitations.

Statistically speaking, numerous studies done worldwide on the SIS concept show benefit not only for those with the disease of addiction, but also for society at large. With the rates of both HIV and Hepatitis C rising during the opioid epidemic, SIS offer sterile equipment and a clean environment for mitigating both sharing of needles and supplies but also for other infectious complications of

NO

Not unless potential risks are clearly identified

The third of the American Medical Association's nine Principles of Medical Ethics states: "A physician shall respect the law and also recognize a responsibility to seek changes in those requirements which are contrary to the best interests of the patient."

Supervised injection sites (SIS) are not legal in the United States; they are a violation of federal law. For a physician to participate in the creation and implementation of an SIS violates the ethical responsibility to respect the law. Additionally, there is a responsibility to seek change in any law if deemed contrary to

YES *(continued)*

IVDU. Overdose death rates, from many studies, dropped to zero as access to naloxone resulted in reversals, even more important with the surge in fentanyl. Aside from individuals' health benefits and subsequent healthcare cost burden, referrals for treatment from SIS range from 37.5–54 percent across studies, aiding in long-term recovery efforts. Communities with SIS also note a substantial drop in crime as well as littered drug paraphernalia.

But is it ethical for a physician to participate and/or help implement such facilities? The concept of harm-reduction, is readily accepted both ethically and legally, as demonstrated by syringe-exchange programs. The Hippocratic Oath—albeit an archaic example of physician-pledged ethics lacking in mention of societal benefit, social needs of patients or disparities, not to mention other ethically questioned practices such as abortions—speaks to prescribing "only beneficial treatments." These treatments are "according to his (*sic* or her) abilities and judgment; to refrain from causing harm or hurt." The statement surrounding "harm" suggests the much more modern concept of harm-reduction in medicine.

SIS are also a beneficial treatment strategy as they minimize disease and death and engage participants in further treatment. One study said of SIS: "the goal here is to protect both the person and the public from harm by changing the circumstances of intravenous drug use … Recognizing human frailty and the ways in which (the disease of) addiction impairs human freedom." Patient-centered, whole-person medicine is aimed at meeting patients where they are, using our knowledge as physicians to not only heal a societally accepted medical diagnosis but also personal trauma, social/societal impacts and all patient needs.

Our responsibility as physicians is to the patient. If a patient is already suffering from one disease, it is our responsibility to treat and/or prevent co-morbid diseases, which often result in worsened morbidity and quality of life. Beneficence to the patient is treating a patient to "do good," ie. to treat one disease to avoid the complications of subsequent harm, the principle of non-maleficence.

Pope Francis, the symbolic figurehead of historical ethics, has engaged with addicts and prisoners not negatively or with stigma, but by washing their feet on Holy Thursday in order to recognize their fundamental human dignity. One may argue that physician non-engagement into the practice of SIS is morally and ethically against all that being a physician stands for.

—Heather Bell, MD, FAAFP, is double-boarded in family and addiction medicine, practicing in Little Falls.

NO *(continued)*

the interests of the patient. Ignoring the law and doing what one thinks is in the best interests of a patient is not consistent with the AMA's third principle. A physician may—and I emphasize *may*—be morally "right" yet ethically "wrong/incorrect" on this topic. Our task is not to assess the morality, but the ethics.

Ethical obligations usually speak to the interaction between the physician and an individual patient. The bioethical principles of non-maleficence, beneficence, autonomy and justice are a simple guide to ethical behavior. But there are no similar ethical principles for a physician's responsibility to society, rather than to an individual patient. The AMA has published a *Code of Medical Ethics: Physicians and the Health of The Community*; among the community-related ethical obligations, none mention SIS.

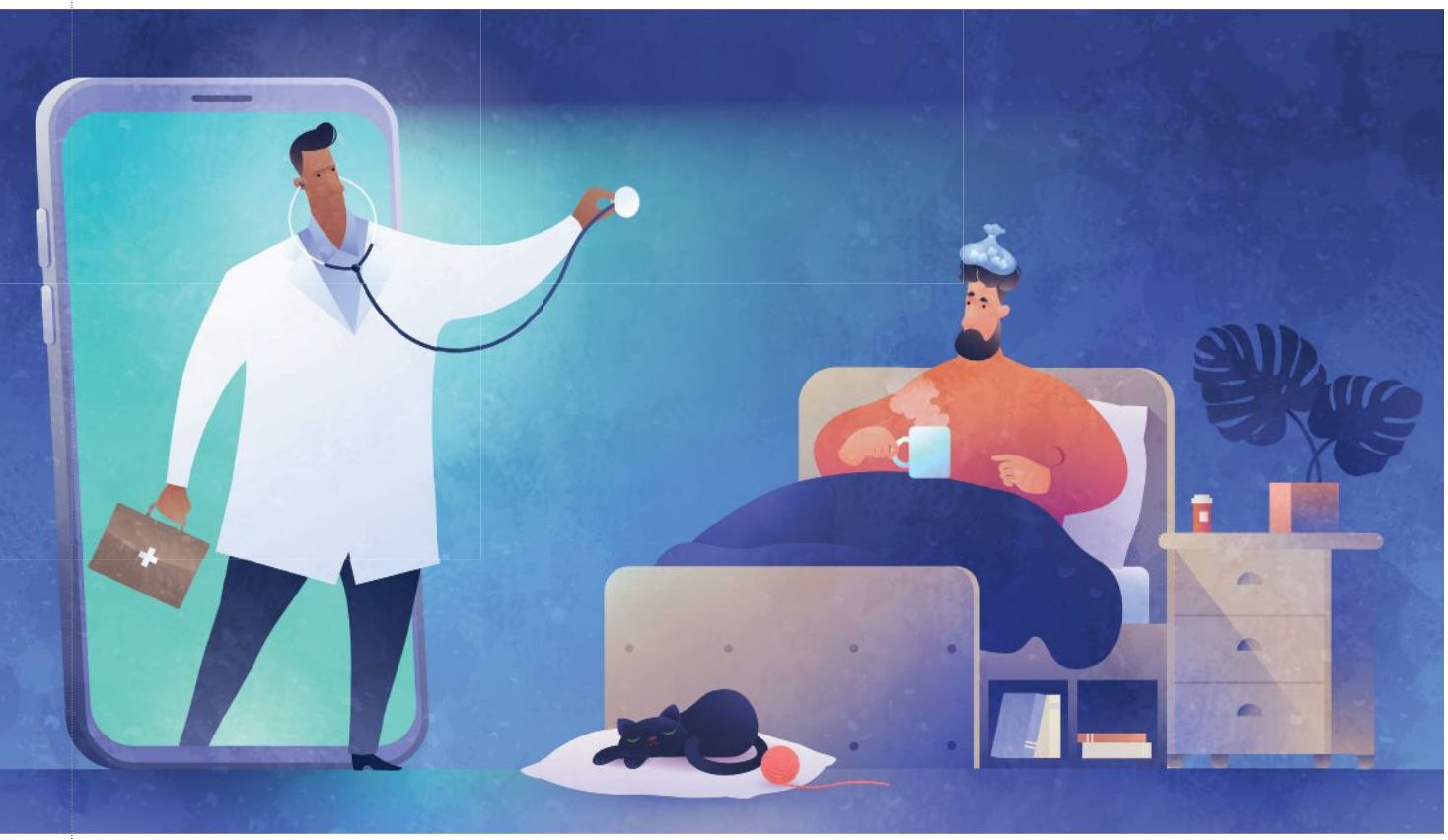
In an amicus brief, the Litigation Center of the American Medical Association and State Medical Societies joined the Pennsylvania Medical Society, Philadelphia County Medical Society and about a dozen other organizations to provide information to the U.S. Court of Appeals for the 3rd Circuit that years of evidence show that SIS facilities provide evidenced-based medical and health interventions that help save lives, offer access to necessary services and provide support to people who use drugs (from an article by Tanya Albert Henry for the AMA). Who can argue with such noble, evidence-based goals?

But a few questions need to be considered:

- Where will an SIS be located?
- How will concerns of the community be addressed?
- If community residents do not want an SIS in their neighborhood, will it be established anyway?
- What are some of the possible unintended consequences of having an SIS? Can a SIS morph into a detox facility?
- Are there better ways to achieve the same or similar goals?

Let's suppose the bioethical principles of non-maleficence, beneficence, autonomy and justice that hold between physician and individual patient apply to physician and society/community as well. After all, there is a duty to inform about risks and benefits. To mention only the benefits of an SIS and not to bring up—and have possible solutions for—risks is not consistent with ethical principles and does not fully meet the "duty to inform" requirement. **MM**

—Scharazard Gray, MD, is a family medicine physician and addiction medical specialist in International Falls.



VIRTUAL VISITS

Practical advice for patients and providers

BY NICOLE GROTH, BS; SARAH MANNEY, DO; AND CATHERINE BENZIGER, MD, MPH

Delivering care over distance to patients in rural areas can be challenging. Telehealth is effective in a hub-and-spoke model that utilizes specialists in an urban hub with patients who are seen in outreach clinics (spokes). Recently, telehealth has expanded to include virtual visits, which enable specialists in urban centers to have direct connection with patients at home via video (using smartphones, tablets, or computers) or telephone. Virtual visits are particularly important for patients at high risk of severe COVID-19 infection, who continue to shelter in place, as well as for patients who live in rural areas and do not have access to routine subspecialty care in their area.

Starting in 2015, telehealth was deployed by the Essentia Health heart and vascular department in the heart failure clinic and cardiac rhythm management clinics and most cardiology providers were familiar with the video conference platform. However, until the COVID-19 pandemic, the use of virtual visits was not widely established as a method of providing specialty care.

Virtual visit implementation

Essentia Health implemented widespread virtual visits on March 18, 2020 using video technology (Zoom) that was integrated in its electronic medical record (EMR; Epic). Patient instructions for the virtual visits were sent to their patient portal (Epic MyChart) and technical assistance was provided by clinic staff. A smart phrase was built to document, in the EMR, patient contact time and type of virtual visit. Video connection was made using a secure video connection through the Epic EMR using Zoom or by telephone if video connection was not available. Patients were encouraged to log in 15 minutes early to complete online questionnaires, including confirmation of demographic information and insurance, PHQ-9 survey and current alcohol and tobacco use, and to confirm medications and allergies. A telemedicine

dashboard was created to display the trends in ambulatory office visits, telehealth and virtual visits across all departments and locations (Figure 1).

We analyzed data from the EH telemedicine dashboard between March 18, 2020 and December 20, 2020. Due to the rising concern of COVID-19 in early March 2020, we found that the number of in-person ambulatory visits in the two-week period March 15–March 28, 2020 decreased 69.7 percent compared to the prior two-week period, March 1–March 14, 2020. Virtual visits reached a peak the week of March 29–April 4, 2020. Of virtual visits in primary care (internal medicine, pediatrics and family medicine), 39 percent of all clinic visits used video conference and 52 percent used telephone (9 percent unknown). The average age group of the primary care clinic population using virtual visits was 60–69 years. In the cardiology clinic, we found that virtual visits were more often completed using telephone (66 percent). The average age group of those seeing providers in cardiology was older, 70–79 years. Only one in four virtual visits was completed with video conference (25 percent), often due to patients not having access to technology for a video visit. While total ambulatory clinic visits increased back to pre-COVID levels in mid-2020, telemedicine remained an important component of ambulatory care. Recent trends in the three-month period of November 1, 2020 through January 22, 2021 show that virtual visits still accounted for 14 percent of total primary care and 23 percent of cardiology ambulatory encounters. Of these, differences persist in use of video technology between specialties, likely reflecting differences in the age of the patient populations. For example, fewer than half (48.6 percent) of recent cardiology virtual visits were completed using video, but the majority (73.9 percent) of primary care virtual visits were video.

We also analyzed an online survey (Survey Monkey) assessing satisfaction with the virtual visits for both patients and providers. Surveys were created by the Essentia Health Communications team and were randomly distributed between May 13 and May 18, 2020 to patients who had completed a virtual visit between March 18 and May 1, 2020. Questions on both surveys were asked using a 4-point scale: strongly agree, somewhat agree, somewhat disagree and strongly disagree. Both surveys also contained an open-ended question asking respondents what EH could do to improve the virtual visit experience.

Key themes in the qualitative portion of the provider survey included:

- Struggles with video connection (connection issues for provider and patient, lack of instructions, patients not wanting to download Zoom, and other technical issues).
- Expectations around virtual visits for providers (scheduling, documentation requirements, billing, insurance, etc.).
- Pre-visit preparation and patient check-in (new patient questionnaires, need for tests prior to visit, recording of vital signs).
- Challenges around virtual visits for specialty care (lack of physical patient assessment and need for labs and imaging prior to visit).

FIGURE 1

Example of Essentia Health telemedicine dashboard. Blue dots are provider locations. Line graphs show volume of virtual visits over time, type of virtual visit (phone or video), and primary diagnosis.

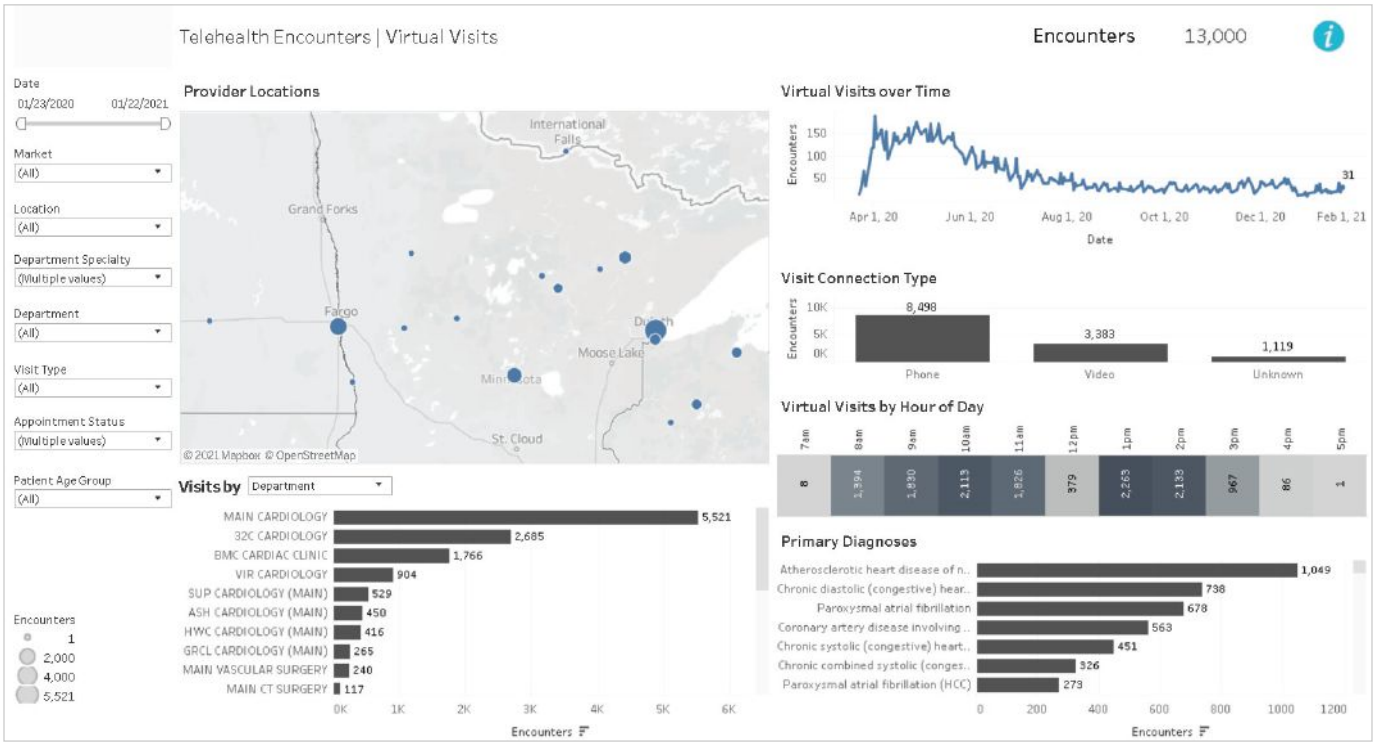


FIGURE 2

Who, what, where, when and why of virtual visit implementation at a large healthcare system.

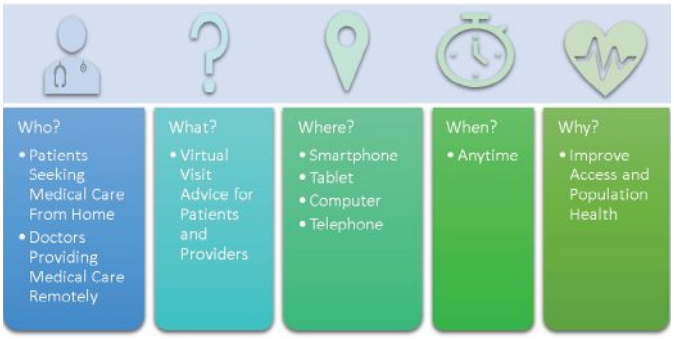


FIGURE 3

Six tips for patients to improve their virtual visit experience with providers.

Key themes from thematic analysis in the patient survey included: "it works well for most visits but cannot replace the face-to-face contact," "need for in-person care," "connection issues," "no labs or vital signs" and concerns about co-pay and cost.

Overall, our survey found a majority (79.1 percent) of providers reported virtual visits to be sufficient for future practice.

Using the feedback from the patient and provider surveys, we propose who, what, where, when and why providers should consider using virtual visits (Figure 2), as well as practical tips to help both patients (Figure 3) and providers (Figure 4) to improve their virtual visit experience.

Barriers to virtual visits

Providers found a strong preference for video visits over telephone visits, given the importance of seeing the patient and their surroundings. However, the provider survey identified a need for improved access to biometric tools for monitoring patients at home, including all patients having a blood pressure cuff, pulse oximetry or reliable scale for weight. Few studies have described a standard way to obtain the physical exam through a virtual visit. A standardized "Telehealth Ten" has been proposed for use in virtual visits to be a tool for providers to obtain a patient-assistant physical exam.

Delivering care over a distance continues to be a daily challenge for health systems in rural areas. While our population continues to age, the burden of chronic diseases will continue to increase. The use of virtual visits is an opportunity to meet the needs of

FIGURE 4

Virtual visit and telehealth best practices for providers to consider before, during and after the virtual visit.

Before

- Relax. Make sure you are in a quiet, private space.
- Ensure both **audio and visual** components are working and that the encounter has been activated in the correct room.
- Ensure you are **seated correctly** so you are visible appropriately on the video.
- Try to position the camera near to where the patient's face will be.
- Your image should be in the middle of the screen, if possible.
- Look at the camera directly to ensure good eye contact.

During

- Address the patient by name.
- Ask the patient about other family members/caregivers that may be in the room, outside of your view, to ensure information is not being shared with individuals that should not hear this information.
- **Introduce yourself** and explain your role.
- If applicable, educate the patient and family about the reason for the encounter and what to expect throughout the encounter.
- Ensure you are **engaged** throughout the visit – including your voice.
- Be **transparent** with the patient and family
- Let the patient know if you look away at test results, etc. Consider sharing screen with patient.
- **Don't** cut the patient off.
- Validate the patient's concerns, then gently turn the conversation toward the right diagnosis without being dismissive or condescending.
- Admit when you need to do some research or consult with a specialist.

After

- Ensure the patient, caregivers, and care team **understand the diagnosis, plan of care** and **next steps** in their care process.
- Answer **any additional questions** that may arise from the patient, caregivers, or care team.
- **Be gracious.** Thank the patient for choosing to see you in this new format.
- Let the patient, family, and care team know how to reach you **if problems should arise.**
- Best practice to **document directly after the visit** – if possible, to ensure all information is gathered.

our patients and address their medical issues while they remain in their own homes, but challenges to routine virtual visits and telehealth, both technical and social, remain. Telehealth has the potential of introducing a new form of disparity in access to care by replacing geographic isolation with digital isolation. While some patients in rural areas have access to both the technological infrastructure and personal technology, many do not. Our survey found that some patients did not have access to the appropriate technology, like a video-capable device, for the virtual video visit. Some patients had a device, but the patient was unable to personally connect to the virtual video visit or to be educated about the process over the phone at the time of the visit. Some patients reported lacking internet connection, having insufficient internet bandwidth and lacking any cellular service, particularly in our rural areas. Efforts to improve equity and equality and overcoming digital isolation are needed in rural and underserved areas.

As of January 2021, we found 14 to 23 percent of primary care and cardiology visits are completed virtually. While video visits are preferred, telephone visits remain a substantial portion of virtual visits, especially in older adults. Future evaluation of virtual visits and outcomes including cost-effectiveness, associated morbidity and mortality, and assessing the impact on worsening or improving disparities for those in rural and underserved areas is needed as digital health technology expands. **MM**

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TABLE 1

Key themes from the Virtual Visit Provider Survey distributed 5/13/2020-5/18/2020 to providers who had conducted a virtual visit at any Essentia Health department or location since 5/1/2020 (n=357).

KEY THEMES	EXAMPLE QUOTES FROM PROVIDERS	
	POSITIVE	NEGATIVE
Technical	"It would be great if there was a practice opportunity where a family could go through the whole process to connect with the appointment prior to."	"Most of the 'problems' were due to the patient's experience with technology or internet connection." "Many elderly patients do not have internet access/ smart phone capabilities."
Provider expectations	"They are efficient which makes me productive and on time, patients stay on task."	"Our productivity expectations have remained the same, despite all providers discussing how much more taxing video visits feel." "little to no information about what we need to do and document - for reimbursement, good patient care."
Pre-visit preparation	"Have [patient] take vital signs if able prior to appt (weight, BP, pulse, temp)."	"I am spending more time preparing for . . . [i.e.] finding digital resources which are not very flexible or easy to use."
Specialty care	"Some components of PT can only be accomplished hands-on but by and large virtual visits is definitely another great tool in the tool chest of patient care." "We are able to provide more timely care to those who live far away and have good internet access."	"Individuals with chronic conditions, it can be difficult to manage without physically seeing the patient." "It is extremely challenging to titrate medications, assess volume status, listen for murmurs, and assess patient's rhythm without adequate blood pressure cuff, heart rate, scale, stethoscope or EKG technology."
Access to care	"Very low 'no show' rate with virtual visits. I think we have been able to reach out more to a population that typically avoids care." "I see virtual as a great opportunity to see patients in the winter when there is poor weather and now when we cannot be direct - we still can make a change for the better for the child and their families."	"It is being used inappropriately in very ill persons and resulting in poor health outcomes/delayed medical care." "The vast majority of primary care visits cannot be done properly without a physical exam and are inappropriate for virtual visits."

TACKLING THE OBESITY

THE LATEST APPROACHES TO A CHRONIC DISEASE

BY SUZY FRISCH

EPIDEMIC

Jeremiah Eisenschenk, MD, knows what it's like to put on a significant amount of weight and feel its myriad effects, from blood sugar variability and reflux to eczema, grogginess and exhaustion. He had been a college athlete who was accustomed to fueling his body with seemingly healthy food to power through daily workouts. During medical school and residency, when time and sleep were at a premium and refined grains and sugars were abundant, he gained 40 pounds.

Though he tried exercising his way back to optimal health—including running the Twin Cities Marathon—it wasn't until he switched to a low-carbohydrate, high-fat diet that he lost the weight and started feeling better. On top of restoring his health and vitality, his new approach to nutrition gave Eisenschenk the tools and experience to counsel his obese and diabetic patients.

A family medicine and obesity medicine specialist at Essentia Health, Eisenschenk sees the toll obesity has taken on his patients in the form of diabetes, nonalcoholic fatty liver disease, metabolic syndrome, heart disease, sleep apnea, mood disorders and more. He seeks to provide them with hope, resources and a roadmap to regaining their health. "I get so much joy out of what I do. It is inspiring to see patients reclaiming their health and vitality as they reverse the metabolic dysfunction with intentional lifestyle change," says Eisenschenk, a hospitalist and chief of the hospital division at St. Joseph's Medical Center in Brainerd.

There are plenty of people for Eisenschenk and other physicians to help with their weight—in fact, two-thirds of adults in Minnesota. More than 30 percent of Minnesotans were obese in 2019, according to the Minnesota Department of Health, and another 36 percent of the state's population is overweight. For Minnesota youth ages 10-17, 10.4 percent are obese, below the national average of 15.8 percent.

As the state's population steadily gained weight and many progressed into obesity, it has become clear to physicians that the overriding sentiment to eat less and exercise more just isn't working to stem an epidemic. Instead, it requires a multidisciplinary, comprehensive and targeted approach that addresses individual's specific situations, says Iesha Galloway-Gilliam, MD, an internist, obesity medicine and integrative medicine specialist at Hennepin Healthcare in Minneapolis.

"There is still quite a bit of misperception and misinformation about obesity and a lack of understanding about the extreme neurohormonal complexity involved," says Galloway-Gilliam, who is co-director of Hennepin's Comprehensive Weight Management Center. "We really want to help our patients, to affirm and confirm their dignity and work on destigmatizing the issue of excess weight. It's much more complicated than we understood 30 to 40 years ago when this started emerging."

Part of that understanding includes knowledge that obesity is a chronic disease, one that is highly complex to manage and treat. Physicians must determine what factors are causing patients' obesity, identify the conditions that often accompany obesity and weigh numerous options for treating the disease. This complexity is what led Galloway-Gilliam to take on additional training to become an obesity and integrative medicine specialist so that she can spend time with patients addressing their issues in a personalized way.

"So many other diseases travel along with obesity. In a primary care model, it can be challenging because you are addressing all of the other things, like asthma or diabetes or coronary artery disease, and not the weight itself," Galloway-Gilliam says. "I wanted to work further upstream so that I can focus on this in a way that will be helpful not only for the weight but for the other disease processes that travel along with the weight."

As Galloway-Gilliam pursued her obesity medicine training, she realized how little she and many other physicians really understand about obesity and weight regulation. It's not an area that is covered extensively in medical school—and neither is nutrition. This can lead to the stigma that many people with obesity face, both in society and at the doctor's office, that their excess weight is their fault.

Obesity medicine specialist Carolyn Bramante, MD, often sees adult and pediatric patients who have experienced that stigma. She explains to them that obesity stems from dysregulation of the body's neurohormonal and digestive systems. This dysregulation makes obesity stubborn to address solely with lifestyle changes like diet and exercise.

"The dysregulation is caused by multiple levels of influences that are mostly out of an individual's control," says Bramante, core faculty member in the University of Min-

nesota Medical School Center for Pediatric Obesity Medicine and Program for Health Disparities Research. "We like to think about blame for overeating or not exercising, but those drives to eat more than we need are caused by things that happened to us in utero or early in life or are influenced by the microbiome. Then layer on top of that complicated socio-economic factors that make it easier for some people to have healthy food and exercise and other people don't. When I bring that up to patients, they seem to really appreciate it."

As complicated as obesity is to treat, it's not *un*treatable. There are many tools available to physicians to help patients manage and often overcome the condition—and it's important to use them, says Charles Svendsen, MD, a bariatric surgeon and obesity medicine specialist at Allina Health, where he is director of bariatric surgery.

"If it was as easy as eat right and exercise, there wouldn't be overweight doctors anymore. It's not news to anyone that it's not working because we have 70 percent of the nation overweight," Svendsen says. "Once your BMI gets over 35, your chances of losing weight with just diet and exercise and keeping it off for a couple of years is 3 percent. That's borne out in multiple studies. With [bariatric] surgery, sustained weight loss at the five-year mark is 80 percent."

Medication

Before turning to surgery, many obesity medicine specialists prescribe medications to spur weight loss. These drugs are effective in shutting off hunger and food cravings in the brain. Used before bariatric surgery, they give patients confidence that they can lose weight, says Daniel Leslie, MD, a weight loss surgeon and obesity medicine specialist at M Health Fairview, where he is system-wide director of bariatric surgery. Leslie recommends that patients use the medications both before and after bariatric surgery.

FDA-approved anti-obesity medications are very safe, and they work by disrupting the dysregulated energy regulatory systems, Bramante says. This gives patients' behavioral changes to their nutrition and activity levels a chance to work.

Two different combinations of drugs have been effective in prompting weight loss: phentermine and topiramate (Qsymia) and bupropion and naltrexone (Contrave). In addition to these options, Bramante uses glucagon-like peptide (GLP)1 receptor agonists. GLPS1s are a newer class of medications that mimic incretin, a hormone that causes the pancreas to produce more insulin after eating. Currently, it's prescribed at 1 milligram a week, and it typically produces a 9 percent weight loss. Studies are showing that a higher dose produces 18 percent weight loss. Bramante expects the FDA to approve the higher dose soon. "For patients who respond with good weight loss with a GLP1 receptor agonist, it's likely that they are deficient in GLP1 receptors compared to other people," she says.

It's also important to make sure patients aren't taking medications that are known to cause weight gain, such as steroids, antipsychotic drugs, antihistamines and some forms of birth control. Eliminating these medications and then using anti-obesity medications can have a big impact on patients, Eisenschenk says. "I want to use every tool I can. When a patient has the courage to see me and talk about sensitive things like their dysfunctional relationship with food, I want to give them all of the momentum I can to get them running downhill, to achieve their goals," he says. "Appropriate medical therapies are the pillar of our comprehensive lifestyle-focused approach to obesity and diabetes and their shared link of insulin resistance."

"I GET SO MUCH JOY OUT OF WHAT I DO. IT IS INSPIRING TO SEE PATIENTS RECLAIMING THEIR HEALTH AND VITALITY AS THEY REVERSE THE METABOLIC DYSFUNCTION WITH INTENTIONAL LIFESTYLE CHANGE."

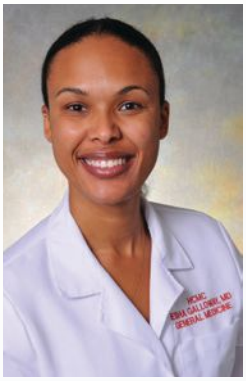
JEREMIAH EISENSCHENK, MD: HOSPITALIST AND CHIEF OF THE HOSPITAL DIVISION; ST. JOSEPH'S MEDICAL CENTER IN BRAINERD

Surgery

By the time people are considering weight loss surgery, they often have been struggling with their weight for years and have tried nearly every diet, exercise program and medication under the sun. Svendsen likes to talk to patients about the three levers of weight loss: restricting *what* you eat, restricting *how much* you eat and restricting *when* you eat. Bariatric surgery—especially for people with a BMI of 35 and higher—will press two of those levers related to the quantity and kinds of food. "I think the best analogy for weight loss with bariatric surgery is that it's surgically-aided fasting," Svendsen says.

The two main procedures are a vertical sleeve gastrectomy and a gastric bypass. Gastric sleeves are 68 percent of the bariatric procedures in the United States; 20 percent are gastric bypasses. The remaining procedures are duodenal switches and gastric bands. Lap bands have drastically decreased, Svendsen says, but duodenal switches have increased in popularity lately. The bulk of patients prefer the gastric sleeve because it doesn't cause malabsorption of nutrients. It also seems less drastic to people, he says, even though the procedure involves the same incisions, recovery time and required supplements post-surgery as other surgical methods.

Another reason to start with a gastric sleeve is that it leaves the digestive pathway intact while removing 70 to 80 percent of the stomach volume. This option reduces the long-term risk of complications as compared to a gastric bypass, which reroutes the digestive track away from the lower stomach and top of the intestine,



"THERE IS STILL QUITE A BIT OF MISPERCEPTION AND MISINFORMATION ABOUT OBESITY AND A LACK OF UNDERSTANDING ABOUT THE EXTREME NEUROHORMONAL COMPLEXITY INVOLVED."

IESHA GALLOWAY-GILLIAM, MD: CO-DIRECTOR: HENNEPIN COMPREHENSIVE WEIGHT MANAGEMENT CENTER

Leslie says. The sleeve still provides for good weight loss, with patients generally losing about 60 percent of their excess weight in one year. Gastric bypass recipients will lose another 10 percent. Svendsen adds that gastric bypasses tend to work better for people who have bad reflux, significant Type II diabetes or metabolic syndrome, and for people around retirement age.

A benefit of the duodenal switch is that it is effective in controlling diabetes. Leslie typically reserves this procedure for people who have a BMI of over 50. Often, he will start patients with a sleeve gastrectomy and then later add a duodenal switch—with a rearrangement of the intestines—if someone has not lost enough weight.

Key to success after a surgery is focusing on the quality of patients' nutrition. Svendsen recommends that these patients eat a ratio of half protein and a quarter each of non-starchy vegetables and low-sugar fruit. "When patients come in, they have been taught the starvation approach, and a large percentage of people can starve themselves for six months to a year. But that doesn't work in the long run," Svendsen says. "That's where the value of surgery comes in. It gives you control over your diet for the long run, and you don't feel like you're starving yourself. They are taking in less, but they are also taking in better food."

Undergoing bariatric surgery is a long process that takes three to 12 months to arrange, complete with numerous visits with a dietician, a psychological evaluation, education about nutrition and weight loss and lining up insurance authorizations. Thirty to 40 percent of patients who consult with Leslie about surgery end up going forward, facing a long list of to-do items to accomplish and other people's sentiments about the procedure.

"There are all kinds of opinions about weight-loss surgery and what it means. Often patients and families are messaging that weight-loss surgery is an easy way out," Leslie says. "That's far from the truth, and it doesn't recognize that the vast majority of people who try to lose weight will not be able to over a several-year period of time."

In addition, weight-loss surgery helps patients with many other chronic conditions like diabetes, sleep apnea, hypertension and joint pain. And in the COVID era, when obesity is the number-one controllable risk factor for hospital admission and death, it's critical to help people lose weight, Leslie says. That's one reason weight loss surgery resumed in May 2020.

Sleep, nutrition and exercise

There is a growing body of knowledge pointing to the importance of sleep in maintaining a healthy weight. It's vital to get enough quality and quantity of sleep because without it, the body increases levels of cortisol and ghrelin, two hormones that cause weight gain, Bramante says. Sleep hygiene is one of the first areas she addresses with her patients, covering good sleep habits and other issues like sleep apnea. "I have a number of patients where the first 5 to 10 percent of weight loss can be achieved by improving sleep," she says.

Eisenschenk makes sleep one of the four pillars of wellness he addresses with patients, along with nutrition, activity and behavioral support. When patients with obesity see him, he certainly measures BMI and body fat percentage, liver function, A1C, insulin level, waist circumference and other assessments. But he also makes a point of asking what they are eating. It's not uncommon to hear about diets filled with sugar, starch and carbohydrates. "The most important question doctors are not asking their patients is: 'What are you eating?'" he says.

"People don't get overweight or obese from eating real, nutrient-dense foods," he notes. "Improving one's dysfunctional relationship with food, commonly refined grains and sugars, starts with recognizing the body's hunger signals, then choosing to fuel your body with essential proteins, fats, vitamins, minerals and water. There is no such thing as an essential carbohydrate."

Using evidence-based guidance, he coaches patients to adopt a low-carbo-

"[DYSREGULATION OF THE BODY'S NEUROHORMONAL AND DIGESTIVE SYSTEMS] IS CAUSED BY MULTIPLE LEVELS OF INFLUENCES THAT ARE MOSTLY OUT OF AN INDIVIDUAL'S CONTROL."

CAROLYN BRAMANTE, MD: CORE FACULTY MEMBER: UNIVERSITY OF MINNESOTA MEDICAL SCHOOL CENTER FOR PEDIATRIC OBESITY MEDICINE AND PROGRAM FOR HEALTH DISPARITIES RESEARCH

hydrate, high-protein diet, whether it's a ketogenic or paleo regimen. Comparisons of multiple randomized controlled trials show that restricting carbohydrates is more effective than restricting fats for prompting weight loss, improving insulin resistance and other markers of metabolic health, such as fatty liver. Low-carbohydrate diets are cited by the American Diabetes Association as having "the most evidence for glycemic control." Once patients get established on the recommended diet, they report that their hunger is controlled, cravings are gone and they have more energy and feel more alert, Eisenschenk says.

"With therapeutic carbohydrate restriction, we consistently see decreases in waist circumference, fat mass, glycemic control, insulin and lipid levels and blood pressure," Eisenschenk says. "Diabetes and obesity are diseases of nutrition and can be reversed with effective nutritional interventions."

Another effective way to help patients lose weight—or as a complement to a low-carb diet—is to adopt intermittent fasting. Svendsen is a big fan, especially a structure of 16 hours of fasting paired with an eight-hour window for eating healthy food. Intermittent fasting targets obesity by restricting the amount of time that insulin levels are elevated after eating, removing people from the roller coaster of blood sugar spikes and crashes. It's very difficult to lose weight with elevated insulin levels. Intermittent fasting also improves metabolism, lowers blood sugar and reduces inflammation.

"We're genetically set up to deal with fasting. Our body knows what to do," Svendsen says. "It's safe to do and cheap, and you don't have to pay for a monthly subscription to Weight Watchers or meal plans. It's more along the lines of intuitive eating and eating when you're hungry."

Clinicians have a big role to play in preventing obesity. Focusing on families and using diabetes prevention programs are a good place to start, says Teresa Ambroz, RDN, manager of the diabetes and health behavior unit in the Minnesota Department of Health Center for Health Promotion. About one-third of people have prediabetes—and many don't even know it. Preventing a shift into diabetes takes losing 5 percent to 7 percent of body weight, focusing on healthy eating and exercise and addressing the social determinants of health that affect weight. The state has 40 diabetes-prevention initiatives across Minnesota that work with community partners on lifestyle-change programs, an effective way to help people manage their weight and prevent diabetes, Ambroz says.

"WE CAN TAILOR YOUR PHENOTYPE OR OBESITY GROUP TO [YOUR] INTERVENTIONS, AND YOU WILL RESPOND BETTER. FROM USING THIS TESTING, PATIENTS ARE LOSING TWO TIMES MORE WEIGHT THAN IF THEY JUST GO FOR THE STANDARD INTERVENTION."

ANDRES ACOSTA, MD, PHD: ASSISTANT PROFESSOR OF MEDICINE; MAYO CLINIC SCHOOL OF MEDICINE AND SCIENCE

Future care

Precision medicine is seeping into obesity care, with the acknowledgment that the condition has multiple causes. By diagnosing the origins of individual's obesity, it becomes possible to target treatments to these causes. Andres Acosta, MD, PhD, an assistant professor of medicine at Mayo Clinic College of Medicine and Science and a consultant in gastroenterology, hepatology and obesity medicine at Mayo Clinic, explains that there are four different sub-groups or phenotypes for obesity:

- Abnormal satiation, or hungry brain—signals of fullness either do not travel from the stomach to the brain or the brain does not receive them.
- Abnormal satiety, or hungry gut—the sense of fullness after eating does not last.
- Emotional hunger—high levels of cravings, anxiety and depression cause some to eat in response to positive or negative emotions.
- Abnormal energy expenditure, or slow burn—the metabolic rate is abnormally slow, often coupled with low muscle mass.

Currently, Mayo physicians can put patients through extensive testing to determine the origin of their obesity. Acosta's Precision Medicine for Obesity Lab, and a spin-off company called Phenomix, are working on diagnostics and treatments that will more quickly identify the underlying issues and causes.

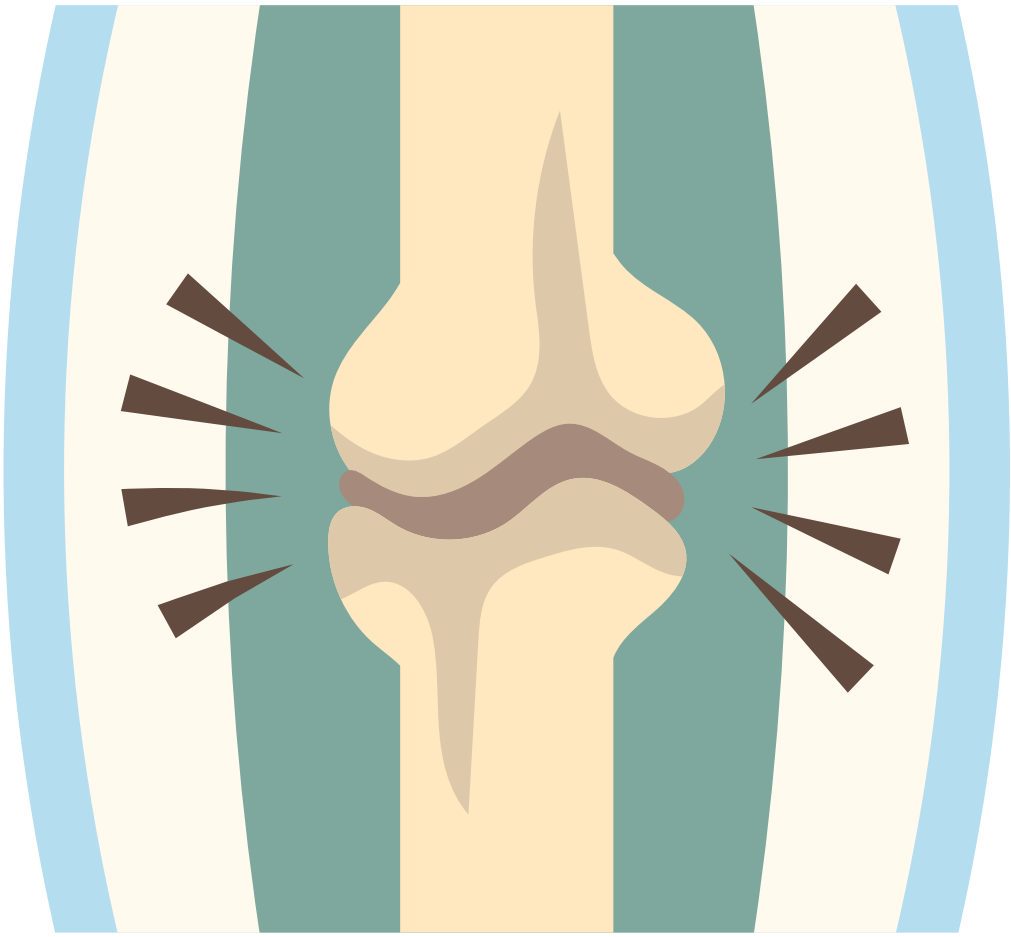
Using an "omics" approach that evaluates hormones, DNA, proteins and metabolites, Acosta and his team can be more objective in assessing patients and selecting treatments. Then they use existing tools for fighting obesity, such as medications targeted to specific conditions, a vagal nerve block, bariatric surgery and/or procedures like endoscopic sleeve gastroplasty, intensive diet and exercise regimens and behavioral therapy.

The difference is, instead of using a trial-and-error method, "we can tailor your phenotype or obesity group to these interventions, and you will respond better," Acosta says. "From using this testing, patients are losing two times more weight than if they just go for the standard intervention."

For example, when using the phenotype approach to selecting an anti-obesity medication, patients lose 16 percent to 18 percent of their body weight, compared to 8 percent to 9 percent if a medication is chosen without this knowledge, Acosta says.

Making headway against obesity will require taking a comprehensive approach that is targeted to patients' individual circumstances and situations. There is a great deal of variance in what causes and perpetuates each person's obesity—and a multitude of options to help. **MM**

Suzy Frisch is a Twin Cities freelance writer.



AN ORTHOPEDIC PERSPECTIVE ON OBESITY

BY SCOTT STEVENS, MD, FAAOS

The Editor's Note on "Reducing judgment to create trust" by Zeke McKinney, MD, in the January/February 2021 issue of *Minnesota Medicine*, is a welcome and necessary treatise on the most appropriate and effective ways in which healthcare providers (HCPs) can successfully engage with our patients. It is particularly pertinent to orthopedic surgery, where the detrimental effects of obesity and deconditioning on general musculoskeletal health, and particularly osteoarthritis, are well-known.

Obesity is an independent risk factor for pain, and a strong association exists between obesity and osteoarthritis (OA). OA is linked to obesity and deconditioning by both inflammatory and biomechanical pathways. The inflammatory pathway consists of cytokines produced by adipose tissue leading to low-grade systemic inflammation, with end effects of cartilage and subchondral bone degradation and myofascial pain. The biomechanical pathway involves the increased forces across joint surfaces and, more importantly, reductions in strength relative to weight, which lead to early fatigue and a concomitant increase in load rate and variability of load across the joint. Persons with obesity and knee OA are likely to encounter a greater loss of quality-adjusted life years (QALY) compared to people with "ideal" body weight and knee OA, and lifetime need for a total knee arthroplasty (TKA) is estimated to be 8–32 times higher in individuals with obesity compared to a non-obese cohort. The rate of intra-operative and post-operative complications—especially infection— in joint

arthroplasty for surgical patients with obesity is also substantially higher.

UNFORTUNATELY, MOST OF US IN THE ORTHOPEDIC SURGERY PROFESSION RECEIVED LITTLE TO NO EDUCATION OR TRAINING IN MEDICAL SCHOOL AND RESIDENCY ON THE MULTIFACTORIAL CAUSES FOR OBESITY.

The American Academy of Orthopaedic Surgeons' Clinical Practice Guideline for symptomatic OA of the knee contains a strong recommendation for "strengthening, low-impact aerobic exercises, and neuromuscular education" and a moderate recommendation for "weight loss" in individuals with a body mass index (BMI) over 25. A similar guideline for OA of the hip has a strong recommendation for physical therapy exercises to "improve function and reduce pain" and a consensus statement that "weight loss may be beneficial in the non-operative management of pain, function, and quality of life" in these patients.

Unfortunately, most of us in the orthopedic surgery profession received little to no education or training in medical school and residency on the multifactorial causes for obesity. Social determinants of health that may relate to obesity, such as socioeconomic status, health literacy, food insecurity, the built environment/safe spaces for exercise and recreation, chronic stress and mental illness, among others, are often foreign concepts. We lack knowledge of theories of health behavior and health behavior change that might enable more effective counseling, and we lack the time and/or economic incentive to broach these subjects with our patients. As a result, obesity is often seen as an individual choice that can solely be addressed via individual willpower; despite our status as comprehensive musculoskeletal experts, we tend to ignore issues of obesity and deconditioning, or we "punt" the problem to our primary care colleagues.

The vocabulary surrounding obesity and weight loss is difficult and complex in nature, with meanings that extend far beyond simple definitions or criteria solely related to musculoskeletal health. These words intersect with societal expectations and cultural beliefs that incorporate concepts of health, wellness, beauty and self-esteem, and with individual experiences and attitudes regarding quality-of-life, exercise and physician interaction. Physicians may be reluctant to bring up the topic during an office visit due to lack of knowledge or training, and for fear of offending the patient, which could lead to poor patient-satisfaction scores on employer surveys or online rating sites. An anti-obesity bias among physicians, whether implicit or explicit, is known to exist and may further compromise patient experiences and adversely affect communication between HCPs and patients.

There are ongoing attempts to reframe the issue of obesity from that of diet/exercise/weight loss to a more holistic approach focused on overall wellness and body positivity. Health At Every Size (HAES) is an organization that advocates for a change in our focus, with an emphasis on addressing matters of systemic injustice and health inequity instead of trying to correct individual behavioral choices. While I appreciate HAES' view of obesity as a broader structural issue, and understand and respect that its founders have life experiences and perspectives that may be different than mine, I admit to struggling with some of their concepts. "Celebrating body diversity" and a claim that "we've lost the war on obesity," in my opinion, minimize the detrimental effects of obesity on musculoskeletal health and can be interpreted as presenting a binary choice between either behavior change lead-

ing to misery and frustration or body acceptance resulting in happiness and wellness. Overall, HAES believes that "behavior change is valuable" and that "health-promoting behaviors make sense for everyone" but places far more emphasis on community and societal factors that lead to health disparity and inequity.

How, then, can orthopedic surgeons (and healthcare providers in general) address issues of obesity and deconditioning that are crucial in optimizing our patients' musculoskeletal health, and how do we best advocate for and dialogue with our patients in an effective and caring manner?

TAKE TIME TO LISTEN

Many patients will preface their comments about back, hip or knee pain with "I know my weight is not helping" or "I'm trying to lose weight, but …" I've had many patients over the past year mention how the stress and limitations due to the COVID-19 pandemic have affected their ability to optimize their health behaviors. This presents an opportunity to discuss how obesity and deconditioning may affect their musculoskeletal problem and, more importantly, to acknowledge the multifactorial causes of obesity and deconditioning and to emphasize that individual behavior change is only one small contributor and is a skill that can be developed through theory-based intervention. It is also important to respect the wishes of patients who do not wish to discuss these matters as they relate to orthopedic conditions, as honoring a patient's wishes preserves autonomy and is likely to lead to a heightened sense of trust and an improved physician-patient relationship.

BE AWARE OF IMPLICIT BIAS

Many physicians have achieved goal-oriented success in part through hard work and delayed gratification. There may be a tendency to expect that others will be able to or wish to adopt similar methods, and those who can't or won't are either lazy or not invested in their health status. Healthcare providers may also believe that persons with obesity have a desire to be thinner, fitter or more active, yet this may not be the case or in any way relate to the reason for an office visit. Prior studies have found a high number of patient reports of inappropriate comments made by physicians about their weight, and the psychological consequences of weight bias can include increased vulnerability for depression, anxiety, poor self-esteem and poor body image and suicidal acts and thoughts. It's important to recognize and defend against our unconscious biases and remember that a person's overall health and wellness encompasses a great deal more than a single musculoskeletal problem or physical malady.

FOCUS ON FITNESS

Instead of an initial discussion centered around "obesity," BMI, diet or weight loss, emphasize the importance of core and lower-extremity muscle strength and endurance in decreasing pain and improving function, and provide referral to physical therapy for instruction on a home- or gym-based program of exercise. A strong patient who is heavier than "ideal" weight is likely to have far fewer problems with pain and/or ambulatory function than an individual with poor muscle tone and stamina with a BMI under 25.

LEARN ABOUT THEORIES OF HEALTH BEHAVIOR AND HEALTH BEHAVIOR CHANGE

Educating oneself on concepts such as perceived severity and susceptibility, perceived benefits and barriers and self-efficacy as influencing individual health choices can be instrumental in understanding our patients and can assist with each individual's care plan. Knowledge of how social determinants; structural inequity; community capacity; the diffusion, dissemination, and implementation of innovations; and social messaging affect health and health behaviors enables a greater understanding of the overlying societal effects that are outside of individual control. An outstanding resource is *Health Behavior: Theory, Research and Practice,* fifth edition, by Karen Glanz et al.

ADVOCATE FOR POLICIES THAT OPTIMIZE COMMUNITY HEALTH RESOURCES AND ADDRESS EXISTING HEALTH INEQUITY

Availability of and access to affordable and nutritious food, and the provision of safe and walkable neighborhoods and other community spaces for exercise and recreation, are perhaps the two factors most pertinent to musculoskeletal health, but stability in housing and employment and opportunity to earn a living wage also can serve to reduce inequity and improve health. Make your voice heard at the local, state, or national level.

Through a lens that sees obesity and deconditioning as a complex and multifactorial issue, we can institute appropriate intervention at individual, community and societal levels, with the goal of improving musculoskeletal health and optimizing function and quality-of-life for all. **MM**

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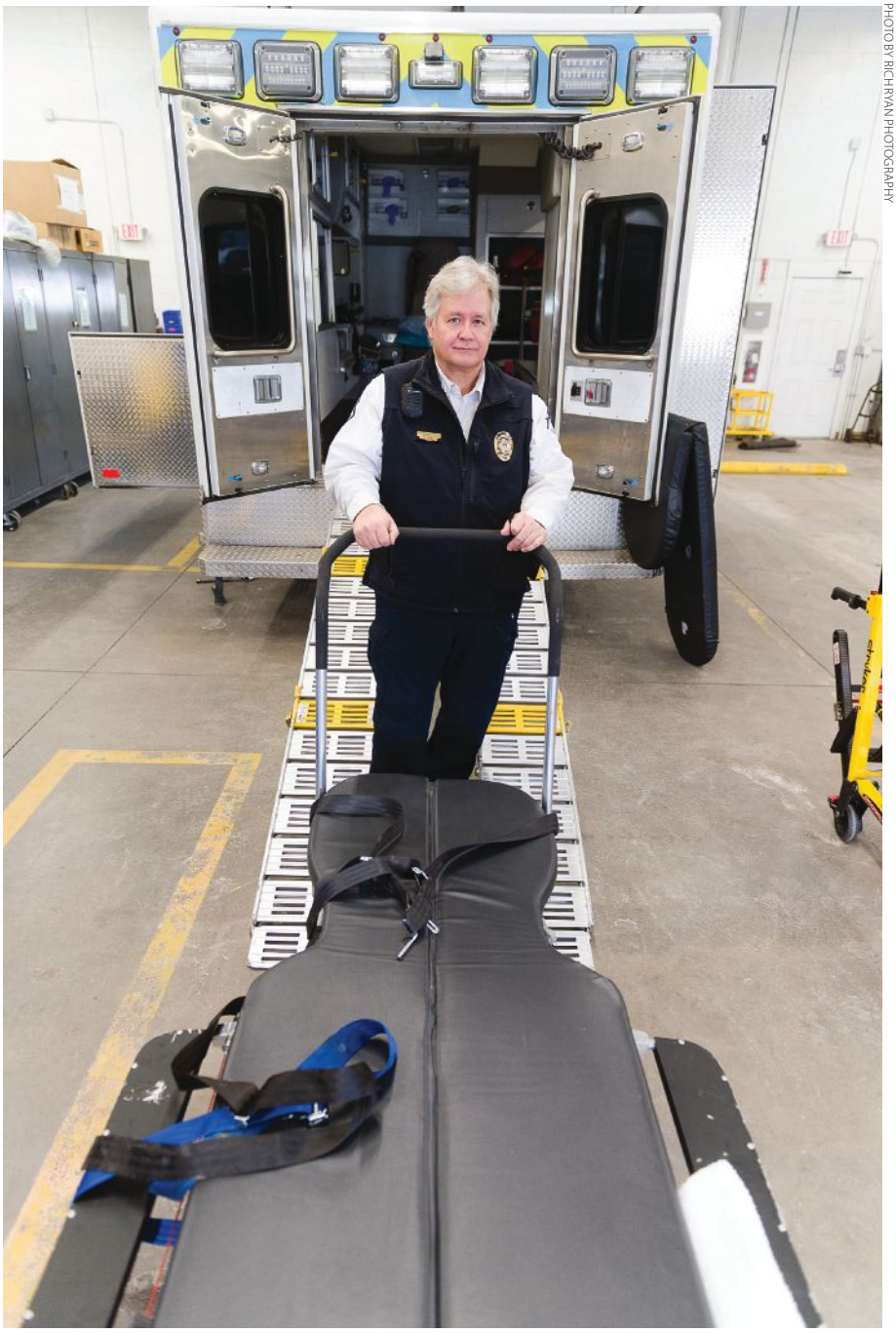


PHOTO BY RICH RYAN PHOTOGRAPHY

EMT and paramedic Jeff Lanenberg uses a special stretcher with wings on the sides that can carry more weight to move obese patients up the ramp and into an ambulance.

AN OUTSIZED CHALLENGE

Healthcare systems and providers have made changes to accommodate a heavier patient population

BY SUZY FRISCH

Surgeon Robert Cima, MD, regularly contends with the difficulties of operating on his colorectal patients with obesity: increased risks for hernia, infection and pneumonia, as well as the limitations of laparoscopic procedures. As more patients crossed the threshold into severe obesity, other challenges emerged. Operating room tables that could tip over when upright, wall-mounted toilets that break away under too much weight and equipment like lifts, CT scanners and wheelchairs that cannot safely accommodate heavy patients.

Hospitals, clinics, emergency services and other healthcare providers across Minnesota continue to grapple with these issues as their patient populations have grown increasingly heavier. They have had to consider and implement a multitude of changes to keep obese patients safe, provide dignified care and protect their employees. It's a necessary but expensive challenge that prompted healthcare entities to rethink a broad scope of issues, from lobby seating to gurneys.

"Across the board, everything is being adjusted to a larger size," says Cima, medical director of Mayo Clinic Hospital in Rochester. "It really started to take off in the last decade. And because of safety and infrastructure issues, it's not something hospitals can do overnight. In the operating room, we had to upgrade a number of tables because patients were outweighing their weight tolerance." Surgeons also needed to procure different instruments that would work for patients with obesity.

In the past decade, Mayo has invested millions in remodeling its facilities. It went floor-by-floor to install ceiling lifts to move obese patients in and out of bed and put in floor-mounted toilets that can safely handle more weight. Doorways were enlarged to make way for wider equipment. Mayo also purchased beds that accommodate higher weights, wider bariatric beds and equipment like wheelchair movers and assistive standing devices. "The whole infrastructure of the hospital has to change,

especially places like us with older facilities," Cima says.

For many healthcare systems, it took a shift in understanding the severity of the obesity epidemic to catalyze movement toward change. Deeper awareness that obesity is a highly complex, chronic disease and not just a personal failure helped propel efforts at Hennepin Healthcare to undertake numerous changes, says Iesha Galloway-Gilliam, MD, an internist, obesity medicine and integrative medicine specialist at Hennepin Healthcare who co-directs its Comprehensive Weight Management Center.

Another impetus came from visual reminders that existing infrastructure just didn't work for a heavier patient population. Wall-mounted toilets would break off walls, or staff would need to call equipment manufacturers to see if operating room tables, scales or beds for the CT scanners could handle higher weights.

"It really required detective work," Galloway-Gilliam says she learned from her now-retired colleague, Gil Hartley, MD. "All of this was going on more than a decade ago, when medical device companies and equipment manufacturers didn't include information about maximum weights. It goes to show that things have evolved, with 30 percent of the American population being obese. This is something front and center and can no longer be ignored."

When Hennepin designed and built its new Clinic & Specialty Center in 2018 in Minneapolis, it made sure to install exam room tables that are safe for obese patients. Previous tables had a pull-out step that was not attached to the floor. There was a risk that people above a certain weight could step on it and tip the table, causing them to fall. Today's tables are electric and can be lowered so that patients can sit directly on them, with a pedal to hydraulically raise the table. Scales are built into the floor in the new building, with plenty of room around them so that patients can be treated with dignity, Galloway-Gilliam says.

In addition, Hennepin instituted annual required training for its surgical and ICU staffs. The training covers obesity sensitivity and safety training for a workforce that does a lot of moving people in the operating room and patients' rooms, she adds.

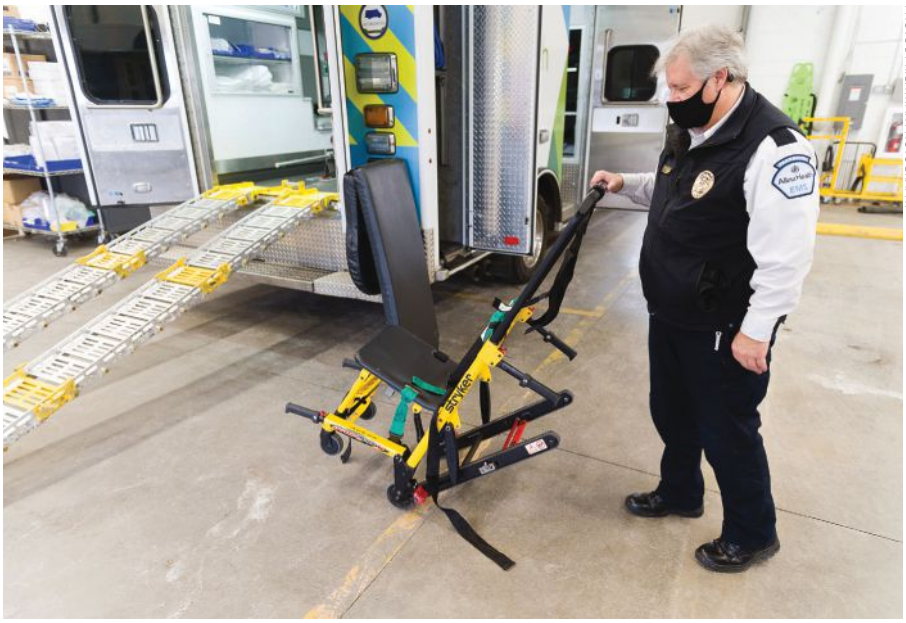


PHOTO BY RICH RYAN PHOTOGRAPHY

A stair chair is used to move obese people down stairs, when using a stretcher would not be safe. Jeff Lanenberg, an EMT and paramedic for 35 years, says he and his crew used to transport obese patients only occasionally; now it's daily.

Comprehensive changes

Bringing in new technology that assists with moving people with obesity helps keep patients safe and also reduces injuries to staff. Quality care and safety for patients and staff were key concerns as Mayo sought to change its facilities to better accommodate obese people. Moving patients from gurneys to beds or from the bed to the bathroom were risky situations. These circumstances often cause the most prevalent injury to staff—back injuries—and they typically required multiple nurses to move one patient. "You can't take two to three nurses off the floor to move a patient anymore," Cima says. "We just don't have the staff."

As Mayo started seeing the clash of having a heavier patient population and more injuries to its staff, it assessed which areas of the hospital had the highest risk factors for patients and most incidents of employee injuries. "We had nurses, physical therapists and facilities people look at how to best transport and move patients, with patients as the number-one priority and then looking at how to protect staff," Cima says. "We looked at what the hottest areas are and how can we educate our staff, what resources do they need and what technology can we bring in the best and fastest way possible."

When Deb Vanderhall, RN, moved into management at Abbott Northwestern Hospital in Minneapolis about 15 years ago, she assumed responsibility for the accreditation process for its bariatric surgery program. Vanderhall—who is now manager of bariatrics and weight loss operations and clinical programs at Allina Health—found an overall lack of awareness about the needs of a heavier patient population and how the hospital could serve them better.

Vanderhall's first efforts involved tracking down weight-capacity information about equipment like wheelchairs, gurneys and scales, and labeling them to keep patients safe. Another project she undertook, along the lines of efficiency, was to create a way to flag patients' electronic medical records if they weigh more than 300 pounds, similar to the way clinicians could enter flags to notify transport staff of other patient needs, such as requiring an interpreter.

"The transport department doesn't have access to patients' charts, but they can see if someone is blind or hard of hearing," Vanderhall says. "The FYI plan reduced the number of times that transport arrived at the patient's room with the wrong

gurney or wheelchair to zero. It cut down on transport times and really improved service to the patient."

Over the years, Abbott and Allina have invested in more equipment with 500-pound capacity, as well as Stryker Zoom gurneys that are easier to move and reduce push-pull injuries to staff. Evaluating seating throughout the hospital became important after Vanderhall saw a man's folding chair give out from underneath him in a classroom. Now the hospital's auditorium chairs can hold up to 1,000 pounds. Similarly, Allina changed out its cafeteria and lobby chairs to ensure that family members and guests have comfortable and safe places to sit. The system also added obesity-sensitivity training.

Such changes extended throughout the Allina system, especially as hospitals and clinics undertook remodeling projects. Today, exam room tables and gurneys can handle patients up to 500 pounds, and about 20 percent of the rooms have wider and lower tables that are easier for patients to access.

When Abbott began remodeling its emergency room in 2016, it started by rethinking how it could better serve a variety of patients, including people who are obese, those with mental illnesses and the elderly, says Jennifer McAnnany, RN, director of patient care for emergency services at Abbott and its WestHealth facility in Plymouth. The project included designing rooms that have ceiling lifts for repositioning patients or moving them from wheelchair to bed. It also incorporated some larger rooms to accommodate other equipment for moving patients, ceiling lifts that can handle up to 1,000 pounds and bariatric beds.

In addition, Abbott's waiting room chairs now include bariatric options and toilets throughout the department have higher weight capacities. "In the old emergency department, all the rooms were created equal and had a much smaller square footage in each room. We didn't have the space to accommodate a lot of lifting equipment," McAnnany says. "By expanding, we have more space in each patient room that can accommodate all of those options to serve all patients. Plus, having higher weight capacities for our everyday equipment like seating and toilets has provided a much more respectful experience for our population."

PHOTO BY RICH RYAN PHOTOGRAPHY

The MegaMover is placed on top of a stretcher, making it easier for a group of EMTs to lift, carry and move people when a bariatric stretcher won't fit in their homes.

It's an emergency

Emergency medical services (EMS) is another area that made significant changes to serve bariatric patients. Jeff Lanenberg, operations manager for Allina Health EMS South Metro region, has been an EMT and paramedic for nearly 35 years. Treating and transporting severely obese patients used to happen once every five years; now it's a situation his crews handle daily with its fleet of bariatric ambulances.

The challenges are numerous, including needing to move patients from their homes where the doors often aren't big enough for wider stretchers. That generally involves using a sturdy tarp with handles around its edge—called a Mega Mover—so that multiple people can carry an obese person from their home to a stretcher waiting outside, Lanenberg says.

EMTs also bring stair chairs with wheels to safely lower patients down flights of stairs, removing some of the strain on employees. Once they are outside, teams will use a ramp and winch system to move people on a bariatric stretcher into the ambulance. Bariatric ambulances also carry equipment like extra-large blood pressure cuffs and longer needles for starting IVs.

It takes significant training to learn how to safely transport severely obese patients, especially in an emergency situation. Allina EMS also frequently transports obese patients from one healthcare provider to another, say from a hospital to a long-term care facility for post-surgical rehabilitation. About 80 out of Allina's 600 EMS staff are trained in bariatric care and transport and their ambulances go to emergency scenes to team with other first responders on moving patients with obesity. A supervisor like Lanenberg also will attend these emergencies to help coordinate care between the two crews.

"We tend to get patients who are very upset that they are being moved out of their environment due to a medical situation or something else. We really try to work with patients to make sure we're doing the right thing, and it's always good to have a second set of hands," Lanenberg says. "It's not always the most ideal setting because we can't get the equipment through the door or into the bedroom and we know we are not going to make the patient happy."

Finding the right equipment to transport obese patients safely and with dignity is a constant trial and one that Lanenberg would love to solve. He knows it's a challenge that is not going to go away anytime soon. **MM**

Suzy Frisch is a Twin Cities freelance writer.

Vitamin D deficiency

This pro-hormone impacts health

BY GREGORY PLOTNIKOFF, MD, MTS, FACP

Allina Health tested 13,500 employees for vitamin D status in 2014. Following Endocrine Society guidelines, 60 percent of Allina employees were low (<30 ng/ml), 30 percent were very low (<20 ng/ml), and 6 percent were profoundly low (<10 ng/ml).

In February 2020, researchers worldwide began publishing data connecting low vitamin D status with COVID-19 severity, including mortality. By early July 2020, six endocrinological medical societies, the French National Academy of Medicine and numerous editorials in peer-reviewed medical journals had called for increased awareness of vitamin D status and, if indicated, vitamin D supplementation, as a low-cost, low-risk resilience factor for potentially reducing COVID-19 morbidity and mortality.

In April 2021, Oireachtas, the Irish Senate, affirmed these COVID medical concerns and stated with urgency: "Every adult in Ireland should start taking vitamin D supplements due to alarming levels of deficiency in the State." It outlined additional measures needed to protect the elderly, minorities and frontline healthcare workers from their increased risk of vitamin D deficiency.

In 2021, physician competency includes knowledge that vitamin D is actually not a vitamin but a seco-steroid hormone derived from cholesterol. Vitamin D receptors are found in nearly every tissue, including T and B cells, bone marrow, brain, lung, heart and endothelium.

Vitamin D binding results in up- or down-regulation of numerous genes that go beyond the regulation of calcium and phosphate metabolism. For example, vitamin D regulates both innate and adaptive immunity, antimicrobial peptide production (cathelecidin and defensins), inflammatory status (Th1 suppression), coagulation and lung surfactant synthesis, as well as the renin-angiotensin system (lung permeability), including ACE2 receptor status.

Vitamin D deficiency is a well-documented risk factor for ICU admission, ARDS, ECMO utilization and ICU mortality in addition to all-cause mortality. CDC NHANES data demonstrates that those at greatest risk for vitamin D deficiency are the very same people at highest risk for COVID-19 hospitalization and mortality: the elderly, obese, persons of color and those with diabetes and hypertension.

In 2021, are you low? How do you know? Are any of your patients low? How do you know? **MM**

Gregory Plotnikoff, MD, MTS, FACP, is founder and medical director of Minnesota Personalized Medicine, an integrative medicine clinic in Minneapolis.

VITAMIN D

Few of us get enough—and that has consequences

BY J. TIMOTHY DIEGEL, MD

Many, if not most, Americans spend most hours during the day inside without sun exposure. Shift workers at night get no sun exposure. Most workers have a commute during which they are not exposed to the sun; they then sit in an office for eight or more hours, commute home, sit for dinner inside and later watch television. Children are inside for most of the school day and spend free time on various screens—phones, tablets or television. Neighborhood sports, fishing, scouting and just exploring often seem to be activities of the past. When we are outdoors, we tend to use various UV protective lotions and sprays to block sun exposure and help prevent common skin cancers, some of which can be life-threatening. This minimal sun exposure for adults and children results in less vitamin D production in the skin.

Vitamin D deficiency is widespread in the United States and throughout the world. The global prevalence of low vitamin D levels is of great concern, especially in certain subgroups of the population.

Benefits of vitamin D

Vitamin D, a steroid hormone, maintains calcium homeostasis and bone metabolism. It is an immune modulator with many genetic regulatory epigenetic pathways. In most human tissues, the vitamin D receptor mRNA is present and has been found to regulate up to 1,000 genes. Vitamin D also controls both innate and acquired immunity. Benefits of vitamin D include:

- *Both prevention and therapy of seasonal epidemic influenza.*
- *Beneficial immune effects*, especially in treating respiratory tract infections.
- *Treatment for worldwide chronic lung diseases*, including chronic obstructive pulmonary disease, cystic fibrosis, asthma and idiopathic interstitial pneumonias. As an example of vitamin D's impact on lung disease, sun rays have been used for therapy for tuberculosis. Since the early 1900s, in the high-altitude "sanitoriums" in Europe and spa-type resorts in the low latitudes in the United States, this "sun treatment" was considered beneficial. Adequate vitamin D levels, prior to the onset of medical treatment, enhanced the innate response of the T cells and other immune cells. As an adjunct therapy, it also reduced the more serious effects of TB infections.
- *Vitamin D metabolites stimulate the expression of anti-microbial peptides* found in inflammatory blood cells in addition to the epithelial cell lining of the respiratory tract. They play a major role in protecting the lungs from infection. A meta-analysis revealed that supplementation with 4000 International Units (IU) of vitamin D reduced the need for antibiotic treatment in frequent respiratory infections.

Vitamin D deficiency

Vitamin D insufficiency exists when blood levels are below 30 ng/ml (nanograms/milliliter). Vitamin D deficiency, which is under 20 ng/ml, is the level where the parathyroid hormone increases. Its metabolites modulate chemokines and other cytokines that mediate viral entry and bacterial adhesions into respiratory epithelial cells.

Low levels of vitamin D are associated with developing and worsening some cancers, diabetes, cardiovascular diseases, chronic diseases and autoimmune diseases. There is a strong association between low vitamin D levels in patients and the acquisition of the COVID-19 disease in the United States and elsewhere in the world.

More recently, published studies have shown that vitamin D deficiencies are associated with many autoimmune diseases such as multiple sclerosis (MS), rheumatoid arthritis, lupus and other chronic diseases including depression, asthma, cancers, upper respiratory tract infections and HIV/AIDS. This effect of vitamin D is due to the ligand properties of binding to the cell membrane and nuclear receptors forming an activated transcription process that regulates many genes. Influenza appears to be less infectious with a strong immune system.

Sun, Vitamin D and supplements

Above the latitude of 37° degrees North (and 37° degrees South) there is insufficient UVB radiation to induce cutaneous vitamin D synthesis, especially in the winter months. The Twin Cities are at 45 degrees latitude. Many studies have shown a significant difference in the prevalence of MS based on latitude (see Map). A Minnesota study found the difference of MS ranged from 112/100,000 in the southern United States to 192/100,000 in the East-

ern states. Similar differences have been found worldwide.

Influenza infections are more common in the winter months when the sun is less intense. The onset of the SARS-CoV-2 pandemic started in the winter. Most of the cities in Italy with some of the highest death rates from COVID-19 are above 40 degrees latitude. A recent study of elderly Italian women revealed that 76 percent had vitamin D levels lower than 12 ng/ml and 27 percent had levels lower than 5ng/ml.

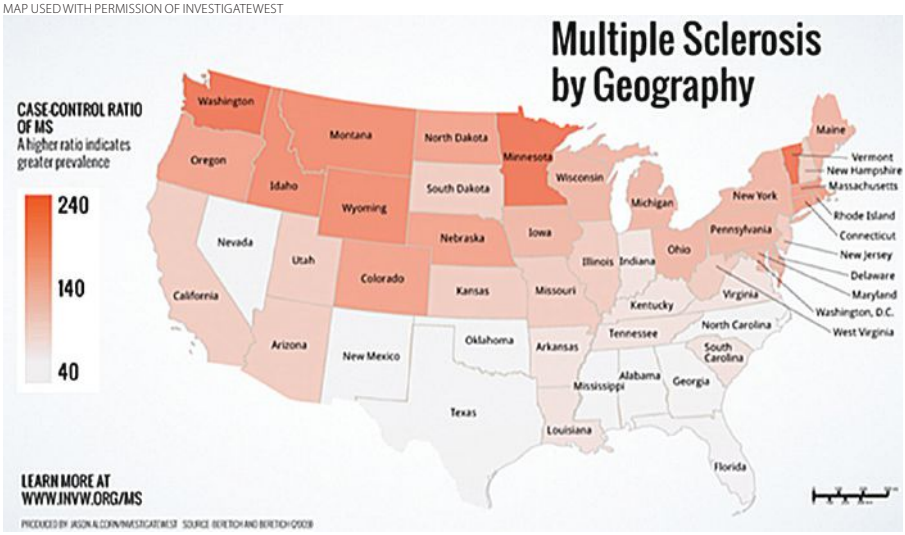
Most elderly people have less body exposure to sunlight due to their inability or lack of opportunity to recreate outdoors; this is especially true for nursing home residents. Older adults, with thinner skin, produce about 25 percent less vitamin D than young adults. This indicates the need to obtain vitamin D from supplements. In addition to the immune modulator effects of vitamin D, the elderly have weaker bones due to vitamin D deficiency, which also causes poor calcium absorption and metabolism.

Obesity is also a high-risk factor for vitamin D deficiency. Since vitamin D is a fat-soluble vitamin, it is sequestered in the body's fat cells. As a result, there is less bioavailability in the circulation of the body. This means obese patients have fewer opportunities to reap the benefits of vitamin D from sun exposure or diet. Supplementation is the only answer for these patients.

People with dark skin are unable to metabolize vitamin D in their skin sufficiently because the sun's UVB radiation is blocked by the melanin property of their skin. Individuals with dark skin tend to have less binding protein to vitamin D, so blood tests may show an inaccurate lower result than the real total of vitamin D in the tissues of the body. Supplementation of 4000 International Units (IU) of vitamin D3 for a year was found to eliminate the difference in the vitamin D levels between Black men and White men.

Many clinicians are not aware that vitamin D regulates so many genes and has immune-modulation functions. Since many of the vitamin D studies are *associative* and not *causative*, these studies may not be accepted by some physicians and other clinicians. This is probably the reason that some clinicians don't recommend vitamin D, since it hasn't been "proven."

MAP USED WITH PERMISSION OF INVESTIGATEWEST



Cases of multiple sclerosis are more common in areas where residents get less sun--and therfore less vitamin D—throughout the year. The Twin Cities, latitude 45 degrees, has a high ratio of cases per 100,000 population.

Many individuals may feel that vitamin D is "just one of those vitamins." Lay people are not exposed to the many research studies that explain the benefits of vitamin D and therefore don't realize that a supplement may be helpful. Now with the SARS CoV2 virus prevalence, it is a serious decision not to take vitamin D supplements unless the level is tested and found to be very adequate. Most people should consider taking supplements due to the many preventive and therapeutic health benefits. The risks and costs are minimal. Vitamin D does need magnesium to help with its metabolism. Magnesium can be obtained from food but many nutritionists recommend a supplement since it is also common to be deficient in magnesium in the United States.

The morbidity and mortality rate for COVID-19 is higher for the elderly, the obese and those with dark skin. These are the same populations associated with unusually low vitamin D levels.

The medical community has an opportunity to connect the dots for the general public. It would be prudent for everyone to take enough vitamin D to reach the target level of 40-60 ng/ml. Especially those with cultural clothing choices that limit skin exposure, those living in low latitudes, patients with immune-compromised pathology and those with chronic diseases should be advised to supplement with vitamin D. A basic daily multivitamin pill does not provide enough vitamin D to ensure adequate levels in the blood; for high-risk groups, especially, a stronger vitamin D supplement should be very beneficial. **MM**

J. Timothy Diegel, MD, is a retired neuro-ophthalmologist; clinical professor, University of Minnesota; and medical director, Florida Lions Eye Clinic.

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Minnesota Poison Control System

Calls for questions and emergencies in 2020

Although some states saw an increase in those seeking help during 2020 because of poisoning during the COVID-19 pandemic—at least in part because of questions about whether some substances, like bleach, could help prevent infection if swallowed—the Poison Center of the Minnesota Poison Control System had fewer calls in 2020 than in 2019: 44,990 in 2020 vs 46,283 in 2019, a difference of about 3 percent.

The one area with a significant change was, not surprisingly, in the number of calls that came from schools: In 2019, there were 106 calls from schools. In 2020, a year when schools were at least partially closed from March until the end of the year, there were only 57 calls to the Poison Center from schools.

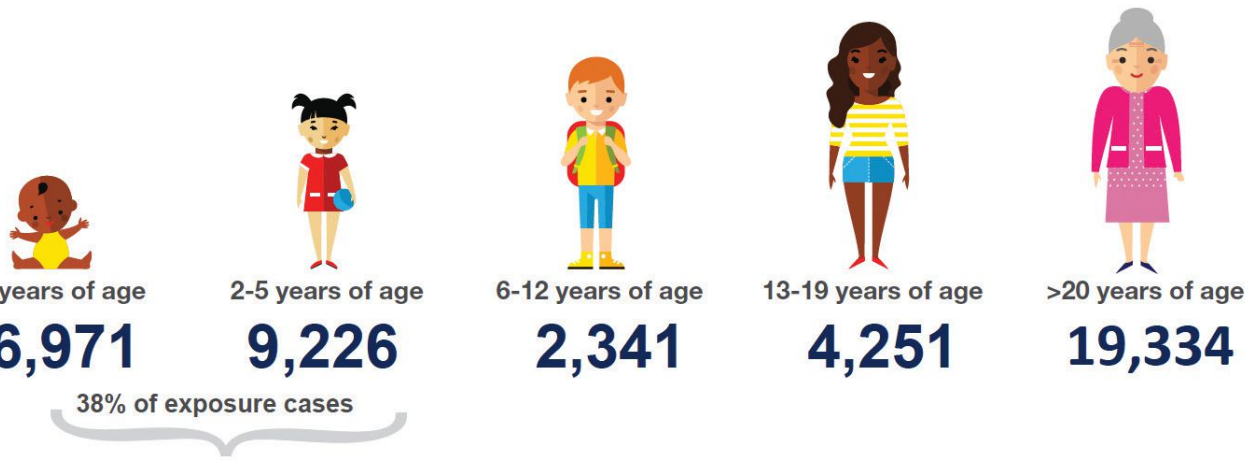
The Poison Center issues an annual report that details the kind of calls it receives, actions taken, the kind of poisons involved and more. Highlights from the report include the information shown here. The full report can be seen at https://mnpoison.org/wp-content/uploads/Poison-Center-Annual-Report-2020-Final-Version-compressed.pdf.

2020 key facts and stats

- Provided immediate help to **44,990** callers. Poison specialists assisted an average of **123** people each day.
- **26%** of patient cases involved health care providers seeking treatment recommendations.
- **38%** of cases involved a child under the age of 6 years.
- **78%** of callers would have sought emergency medical attention if the Poison Center was not available.
- **92%** of exposures occurring in a residential setting were safely managed at home with Poison Center assistance.
- **89%** of cases transferred from nurse lines were managed at home.
- **62%** of exposures involved prescription and/or over-the-counter medications.

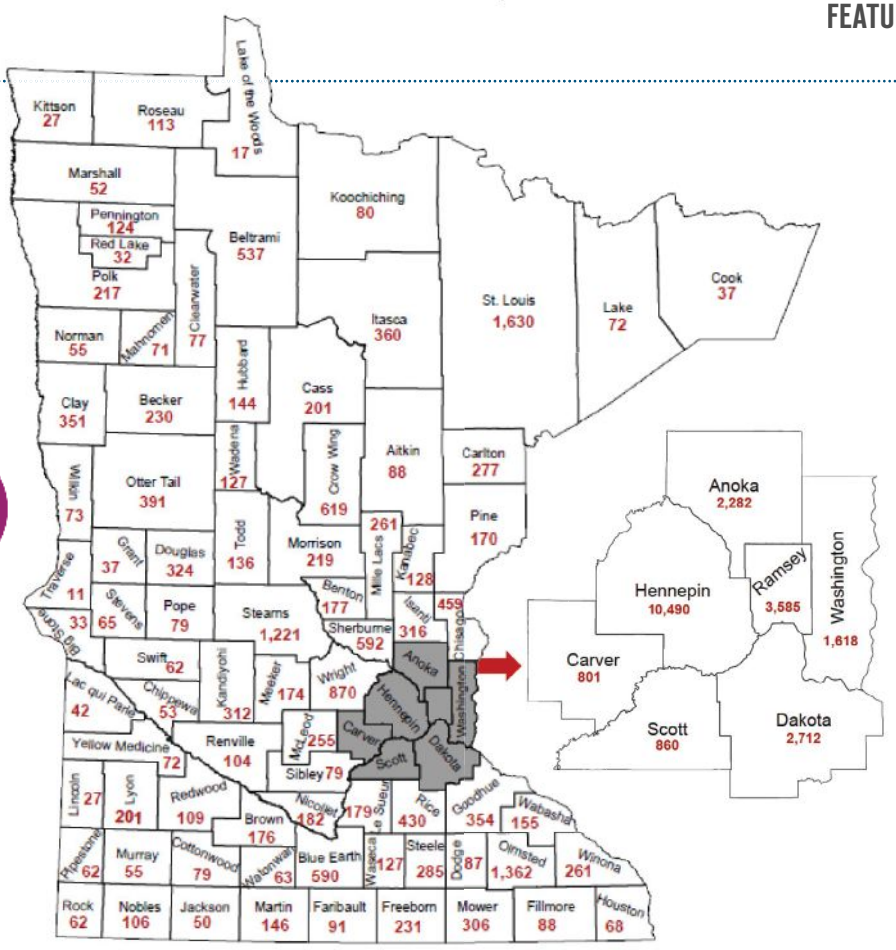
Age of patients

Poisonings affect individuals of all ages, from babies to seniors. Approximately **38%** of exposure cases involved children under the age of 6 years. More serious outcomes were typically seen in teenagers and adults due to a larger number of intentional exposures occurring in these groups.



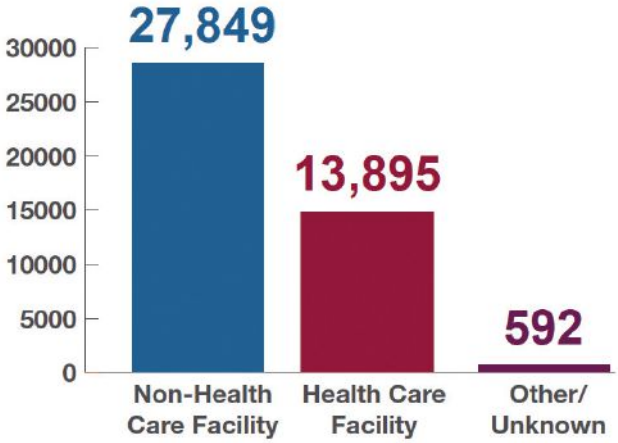
Number and type of cases

The Poison Center managed a total of **44,990** cases in 2020. While **42,247** of those cases involved an exposure, the remaining **2,743** were requests for poison information.



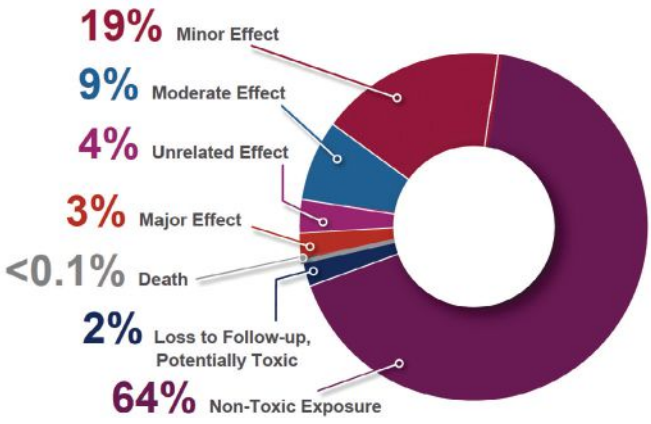
Management site

In 2020, **92%** of residential cases were able to be safely managed at home. For cases originating from healthcare facilities, the Poison Center was able to assist providers seeking patient treatment recommendations. By keeping patients at home and reducing average hospital stays with treatment advice, the Poison Center is able to help save both time and money.



Medical outcomes

Overall, **83%** of Poison Center cases had outcomes with little or no effect being seen in the patient. Prompt attention to poison exposures helps to reduce the likelihood of severe toxicity, preventing poor outcomes.



Percentages do not add up to 100 due to rounding

Top five substances involved in poisoning

Non-drug

- Household cleaners
- Cosmetics, personal care items
- Alcohols
- Foreign bodies, toys, silica gel packets
- Infectious and toxin-mediated diseases

Drug

- Analgesics
- Antidepressants
- Sedatives, hypnotics, antipsychotics
- Cardiovascular drugs
- Stimulants and street drugs

Reason for exposure

Individuals who contact the Poison Center have many different reasons for calling. Unintentional exposures can include accidents, mistakes when using products, food poisoning or errors with medicine. Intentional exposures can be due to abuse, misuse or suicide attempts. Adverse reactions can happen with drugs or other substances. Other reasons are rarer, but can include tampering or contamination.

Caller site

More than half of the exposure calls to the Minnesota Poison Control System came from residential settings and over a quarter came from healthcare facilities (e.g., hospitals, clinics, or emergency medical services providers). Other common call sites included workplaces and schools.

Poison education

Public education

Community education efforts focus on poison prevention and increasing awareness of the Poison Center's services among people of all ages.

Due to the cancellation of many outreach events in 2020, the Minnesota Poison Control System relied heavily on social media to share safety information that was especially pertinent during the pandemic.

Professional education

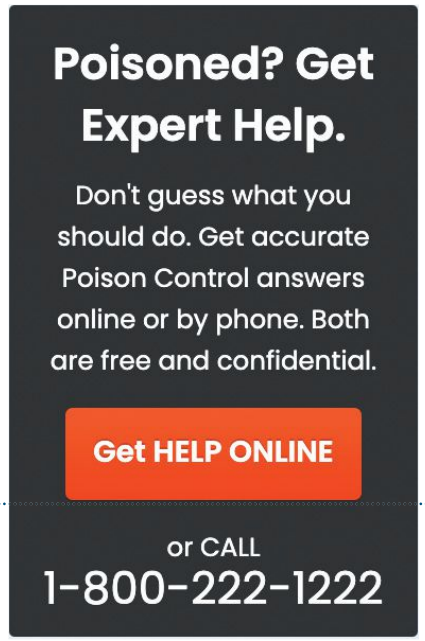
The Poison Center provides vital education for medical professionals and those in training.

In 2020, more than **3,600** healthcare professionals were reached through education events. Additionally, **38** medical residents, fellows, students and pharmacists were trained by Poison Center staff.

Learn more

Complete the free online poison-prevention training program. It is available at training.mnpoison.org and helps teach about poison safety and using the Poison Center as a free resource.

Visit the website at mnpoison.org for more poison-prevention information and to order materials free of charge.



Ways to get help

Anyone who has a poison-related question or suspects a poisoning can always get immediate help from a poison expert by calling 1-800-222-1222. Free help is also available 24/7 online by going to www.webpoisoncontrol.org. Based on the information provided about a poison exposure, users are given a case-specific recommendation that helps them decide what to do when substances are swallowed, splashed in the eye or on the skin, inhaled or injected.

A total of **2,749** Minnesotans received help online by using the webPOISONCONTROL® tool or app in 2020. This was in addition to the **44,990** phone cases that were managed.

How do we educate children during a pandemic?

We must look at the long-term psychological fallout

BY ANNA DOVRE, BA, AND JENNA TRIANA, MD

The widespread implementation of school closures in response to the SARS-CoV-2 pandemic has been one of many public health interventions aimed at stemming the tide of viral transmission. While data regarding the epidemiologic impact of school closures remains scarce, the deleterious effects of social isolation on the developing child and the negative psychological sequelae of living in a time of pandemic must be addressed. Distance-learning measures, intended to replace classroom instruction, have varied widely across school systems based on inequitable resource capacity and rely heavily on parents and caregivers to fill in the gaps, exacerbating the impacts of social determinants on children's educational and mental welfare. The decision of when and how to return to in-person learning should take into consideration not only the dangers posed by the novel coronavirus, but the equally significant dangers of prolonged isolation and its effects on the pediatric psyche.

Over the last year of tumultuous, taxing and unprecedented change, schools across the country have struggled with the decision of how to educate their students: reopening classrooms for in-person learning, keeping students at home with virtual curricula or opting for a hybrid model. In many school systems, these decisions have been made and remade over again as COVID-19 case rates oscillate in severity across seasons and regions. Families continue to wrestle with the competing demands of work, health and the safety of their children. It has been a time of profound uncertainty for school-aged children and their caregivers. The limitations and disparities of our school systems have been thrown into sharp focus, and the leaders of these institutions have struggled to scramble together a solution that fits for all parties. Meanwhile, the compounding effects of the pandemic place an ever-increasing burden on families to provide an environment that meets the myriad social, educational and psychological needs of their children.

The online distance-learning and home-schooling measures adopted at the beginning of the pandemic to adhere with social distancing guidelines have been applied inconsistently across school systems based on inequitable resource capacity and rely heavily on parents and caregivers to fill in the gaps. Where parents are unable to provide structure or technology resources to ensure distance participation in school, children are falling through the cracks. Public school teachers, already struggling with low wages and a lack of structural support, were abruptly saddled with the task of providing the same services to their students in a radically altered digital environment; many have also been asked to face uncertain epidemiologic risks by returning to in-person teaching. The questions with which all of these stakeholders are grappling is: how do we raise our children in a time of pandemic? How do we keep them safe? How do we keep ourselves safe? And what will be the long-term fallout?

The question of how to educate our children during a pandemic is tied to the question of how this new paradigm of social isolation and physical distancing affects the well-being and development of our youth. Determining the costs and benefits of home-schooling measures must include a careful triage of the physical, social and psychological needs of the pediatric population, and whether these needs are currently being met. The psychological

health of children during a pandemic is particularly salient because of children's unique vulnerability to psychological trauma, as well as the deleterious effects of trauma on the developing nervous system, endocrine system and hypothalamic-pituitary-adrenal axis. It is essential for us to recognize the potential effects of the COVID-19 pandemic on children's mental and behavioral health in order to generate and implement timely interventions, both on a familial and a structural level, to mitigate harms and bolster the healthy development of our next generation.

As the COVID-19 virus began to reach pandemic proportions in China, researchers acknowledged that such an adverse event would have notable psychological and physiological manifestations in children. In a preliminary study, the three most severe of these manifestations were identified as inattention, irritability and clinginess. Other concerns included sleep difficulties, nightmares, decreased physical activity, loneliness, agitation, worry and fear for the health of relatives. In more recent studies, the COVID-19 crisis has been associated with feelings of abandonment, despair, incapacity and exhaustion in children.

As our understanding of adverse childhood experiences has broadened over the last several years, we have come to recognize the profound impacts of such experiences on the allostatic processes of the body, and the long-term effects on health outcomes. We know now that children exposed to traumatic events are at greater risk of premature mortality, depression, hypertension, diabetes and other causes of morbidity. It is possibly too soon to determine whether COVID-19 can be considered an adverse childhood experience on its own. However, it is not too soon to say that the pandemic has weakened our existing social safety nets, and rendered many families in ever-more-precarious economic and interpersonal situations. In the home, this puts children at increased risk for experiencing parental mental illness, domestic violence, and other forms of maltreatment. Children who had to undergo isolation or quarantine during previous pandemics developed PTSD at rates as high as 30 percent.

The social isolation and physical distancing measures enacted as a result of COVID-19 carry their own psychological sequelae. For many children, the loss of the usual school routine means a lack of peer contact, reduced opportunities for stress regulation and impeded access to community resources such as social work, counseling and psychiatric care. Quarantining in the home often results in increased screen time, decreased physical activity and disrupted diet and sleep schedules, all of which have an impact on overall psychological health and development.

In the absence of the normal school structure, the role of parents and caregivers in creating an environment that meets their children's needs while mitigating stress and anxiety becomes a crucial one. Caregivers can ensure that a child is getting regular meals and adequate sleep, helping them to maintain a healthy daily rhythm. They can also serve as role-models for appropriate emotional regulation, listen patiently and attentively to their children's concerns and anxieties, and encourage productive coping strategies. In an ideal scenario, the stay-at-home policies offer an opportunity to strengthen familial bonds while meeting children's psychological needs. However, this is a model that over-burdens families, especially those who are least resourced and most vulnerable to economic hardships. In the face of school and daycare closures, the burden of childcare may fall upon elderly family members, who face the highest pandemic-related health risks. Parents who are essential workers, if they have no childcare options, may be forced to stay home and shoulder even greater economic burden. As a result, families may face increased risk of unstable housing or food insecurity.

Universal, structural interventions are necessary to ensure that the psychological welfare of our youth is not left up to parents and caregivers alone. The continued development of new content and technology, which can facilitate equitable, efficacious virtual learning experiences, is of the utmost importance. As part of the online curriculum, schools should consider incorporating education on strategies for emotional regulation, so children may learn how to reduce negative emotions, cultivate empathy and compassion and enhance adaptability. The likely long-term continuation of social-distancing measures may also require school leadership and policymakers to reassess the costs and benefits of keeping children at home, even part time, as the social and economic hardships of limited in person time at school begin to outweigh the epidemiologic benefits. Fundamentally, whether in the home or in the classroom, we must create conditions that keep our children and our communities safe, while enabling them to grow and flourish amidst the chaos of the pandemic. **MM**

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Forum examines declining number of Black male physicians

In 1978, 1,410 Black men applied to U.S. medical schools. In 2014, that number was 1,337. Currently, only 2 percent of American physicians are Black men. What's going on?

More than 140 physicians and physicians-in-training gathered online in mid-April to try to answer that question while discussing the new documentary "Black Men in White Coats."

The 80-minute documentary, which came out in February, examines the systemic barriers preventing Black men from becoming medical doctors and the related health disparities in minority communities. Its aim is to educate those involved in accepting, educating, training and supervising medical students, residents, fellows and health staff about the barriers to increasing the number of Black men in medicine.

The film's creator, Dale Okorodudu, MD, a pulmonary and critical care physician and an assistant professor of internal medicine at University of Texas Southwestern Medical Center, led the panel discussion. He was joined by Cedric M. Bright, MD, FACP, associate dean for admissions and professor of medicine at the Brody School of Medicine, East Carolina University, and William A. McDade, MD, PhD, chief of diversity, equity and inclusion at the Accreditation Council for Graduate Medical Education (ACGME). Both Bright and McDade are featured in the documentary.

Moderators for the event include Dionne Hart, MD, MMA Trustee, and Derrick Lewis, medical student, Mayo Clinic Alix School of Medicine and MMA Medical Student Representative on the MMA Board of Trustees.

Along with the MMA, the forum's sponsors include: the Minnesota Association of African American Physicians, Minnesota Medical Association Foundation, Student National Medical Association (SNMA) chapters at Mayo Clinic Alix School of Medicine and the University of Minnesota Medical School, Twin Cities Medical Society and Zumbro Valley Medical Society. **MM**

Participants in the forum included (clockwise from upper left) Dionne Hart, MD, medical student Derrick Lewis, William A. McDade, MD, Dale Okorodudu, MD, and Cedric M. Bright, MD.

News Briefs

Nominations for MMA officers now open

The nominating process is open for MMA leadership; nominations will close in June. In particular, the MMA is seeking candidates for president-elect, the resident/fellow trustee position, and from the Southwest trustee district. A copy of the job descriptions and preferred skills/attributes can be found at: https://www.mnmed.org/MMA/media/Hidden-Documents/MMA-Leadership-Job-Descriptions-2019.pdf.

Please send any nominations to Shari Nelson (snelson@mnmed.org) by June 4.

The nominating committee will meet later in June to recommend a slate of candidates for each position. The member-wide election will begin in August and close 30 days later. Election results will be announced as soon as possible. New leadership will assume their roles following the Annual Conference in September.

PHOTO BY MIKE KRIVIT

Nominate a peer for one of MMA's awards

Members are encouraged to nominate their peers, medical students, residents/fellows and advocacy champions for one of MMA's annual awards. Visit the MMA website (https://www.mnmed.org/about-us/MMA-awards) to make a nomination by June 30.

Award categories include:

- *Distinguished Service Award*. Given to a physician who has made outstanding contributions in service to the MMA on behalf of medicine and the physicians of Minnesota during their career.
- *President's Award*. Designated for individuals who have made outstanding contributions in service to the goals of the MMA.
- *Medical Student Leadership Award.* Presented to a member of the MMA Medical Student Section who demonstrates outstanding commitment to the medical profession.
- *Resident & Fellow Leadership Award*. Presented to a member of the MMA Resident & Fellow Section who demonstrates outstanding commitment to the medical profession.
- *COPIC/MMA Foundation Humanitarian Award.* This award is presented each year to honor a physician for volunteer medical services and contributions to their community, specifically to MMA members who go above and beyond to help address the healthcare needs of underserved populations in Minnesota.
- *James H. Sova Memorial Award for Advocacy*. Given to a person who has made a significant contribution to the advancement of public policy, medical sciences, medical education, medical care or the socio-economics of medical practice. Sova was the chief lobbyist for the MMA from 1968 until the time of his death in December 1981.
- *Eric C. Dick Memorial Health Policy Partner Award*. This award shall be given to an individual, group of individuals, a project or an organization that demonstrates their commitment to pursuing sound public policy, building coalitions, creating and/or strengthening partnerships with the goal of improving the health of Minnesotans or the practice of medicine in Minnesota. Dick was the MMA's manager of state legislative affairs from 2010 until his untimely death in January 2021.

Awards will be given during the MMA's virtual Annual Conference in September.

TCMS to reorganize, cease role as MMA component medical society

Twin Cities Medical Society (TCMS) leadership announced in mid-April that the component medical society will separate from the MMA at the end of 2021, creating a new healthcare entity that will be committed "to engaging and supporting physicians in advancing public health initiatives."

This development does not affect how the MMA operates nor does it change MMA's ongoing commitment to making Minnesota the healthiest state and the best place to practice.

"We will continue to advocate on behalf of all of the state's physicians and physicians-in-training," said MMA President Marilyn Peitso, MD. "We wish TCMS well as it embarks on its new organizational strategy and look forward to collaborating in new ways in the future."

TCMS was launched on Jan. 1, 2010, following the merger of the East Metro Medical Society and the West Metro Medical Society.

MN youth still vaping at high rates, survey shows

A recent survey from the Minnesota Department of Health (MDH) shows that Minnesota youth are still vaping at high rates, with one in five high school students using e-cigarettes and 70 percent of high school and middle school users reporting signs of nicotine dependence.

The survey results, released in February, suggest public health efforts have slowed the rapid growth of e-cigarette use seen in recent years. E-cigarette use held steady in 2020 compared to 2017. Overall tobacco use declined to 20.5 percent of high school and 4.1 percent of middle school students hav-

ing used a tobacco product in the past 30 days, compared to 26.4 percent (high school) and 5.2 percent (middle school) in 2017.

The new Minnesota data also show nearly 80 percent of Minnesota students reported that the first tobacco product they ever tried was flavored.

The survey also provided insight into youth who vape marijuana. Among students who use e-cigarettes, 65.1 percent of high school and 71.7 percent of middle school students have vaped marijuana, a statistically significant increase from 2017.

The use of cigarettes and cigars dropped to the lowest rates ever recorded by the survey. Just more than 3 percent of high school students report smoking cigarettes over the last 30 days—a steep decline from 2017. Cigar use among high school students is now also just as low.

MHA releases report on Minnesota's healthcare workforce

The workforce diversity rate in Minnesota hospitals and health systems increased over the past 11 years by 110 percent—from 10 to 21 percent—in the Twin Cities metro area and 66 percent—from 3 to 5 percent—outside the metro area, according to a new report released March 3 by the Minnesota Hospital Association (MHA) examining healthcare workforce demographics and turnover.

MHA member hospitals and health systems are asked to submit data annually on age, gender, race and ethnicity for 40 direct-patient-care jobs in their hospitals, clinics, laboratories and emergency response and outpatient services. The data in this report reflect workers employed on January 1, 2020, so do not include workforce data during COVID-19. The report represents a synopsis of healthcare workforce data collected by MHA to illustrate benchmarks and trends hospitals and health systems use to perform strategic workforce analysis and make decisions on how to support healthcare staff.

There were 52,263 (68 percent) healthcare workers in hospitals, 16,966 (22 percent) workers in clinics and 7,474 (10 percent) in other care settings participating in MHA's 2020 data collection. Most workers identify themselves as white/non-Hispanic (85 percent) and women (82 percent). They work full-time (57 percent) for a facility in the Twin Cities (62 percent).

Other key findings in the report include:

- In the Twin Cities, 29 percent of the population identifies as Black, Indigenous or people of color (BIPOC). Patients who received care at Twin Cities hospitals and health systems had a diversity rate of 25 percent. Outside the Twin Cities, the population diversity rate is 12 percent, while that of the hospitalized patient population is 11 percent.
- Certified nursing assistants are the most diverse job category—approximately 45 percent of workers in that position identify as BIPOC—followed by pharmacy technicians, rehabilitation registered nurses and nursing station technicians, with BIPOC individuals making up between 29 percent and 30 percent of those positions.
- Minnesota hospitals and health systems onboarded 9,884 workers in 2019, 63 percent of whom were under the age of 35 and in the early stages of their careers. Two-thirds of the new workers hired in 2019 were in Twin Cities hospitals. BIPOC individuals represented 22 percent of the new hires by health systems statewide. Black and Asian workers comprised more than 71 percent of the BIPOC new hires.
- Nurses are the largest category of the healthcare workforce. Thirteen registered nurse (RN) specialties represent 42 percent of the healthcare workers reported. Physicians represent 7 percent of those reported. The remainder of those reported have a job other than an RN or physician.
- Healthcare positions are held predominantly by women. The only positions with more males than females are physician (58 percent male) and paramedic/EMT (61 percent) positions. The largest gender difference occurs in the labor and delivery RN positions, where females make up 99.4 percent of the reported workforce.
- Millennials make up the largest group of workers now. Five generations are actively working together in hospitals and health systems across Minnesota. The most recent data shows that millennials between the ages of 28 and 35 make up 46 percent of the workforce.

Noon Physician Forum recordings available online

If you are unable to attend a physician forum you're interested in, you can access the recordings on the MMA website (https://www.mnmed.org/education-and-events/Physician-Forums/Previous-Forum-Recordings) and earn CME credit. All forums and recordings are free to MMA members; $15 for non-members.

MMA trustee wins U of M award on gender equity and inclusion

MMA Board of Trustee Rebecca Thomas, MD, was recently awarded the University of Minnesota Center for Women in Medicine and Science 2021 Leadership Award for Advancing Gender Equity and Inclusion in Medicine and Science. The award was developed to recognize individuals who have made significant contributions to the advancement of gender equity and inclusion at the University of Minnesota Medical School.

FROM THE CEO

Making lemonade out of lemons

As CEO of the MMA, I am fortunate in many ways. This is an organization with a long and distinguished history, of which my favorite fun fact is that MMA preceded Minnesota statehood by five years. The association's members are passionate, smart and from one of most well-respected professions. The organization's work makes a difference, is relevant and is interesting. The leaders are dedicated and thoughtful stewards. Most personally gratifying, however, is the opportunity to lead a team that is hard-working, professional and creative.

With 19 full-time employees plus a handful of consultants, the MMA staff is a modest but mighty crew. Like others drawn to nonprofit work, many MMA staff were attracted by the organization's mission and purpose. The expertise of staff reflects the organization's core strategies—advocacy, communications, education, membership engagement, collaboration and internal operations.

As in other organizations, the MMA Board of Trustees sets the strategic direction that it believes will advance the mission and best meet the needs of members. Staff then implement the work needed to bring the strategic plan to life.

The late business management guru Peter Drucker famously said, "Culture eats strategy for breakfast." This maxim underscores the importance of investing in, supporting and caring about the people who work for an organization. An organizational culture under stress can be an almost tangible thing—tension in the air, chatter that is negative or distracting, low productivity, high turnover, cynicism and perhaps even distrust. Most importantly, a negative culture prevents organizations from being successful. Physicians know this all too well—consider the relationship between physician burnout and medical errors.

There are, of course, ways to assess organizational culture and employee well-being. In May of 2020, in the early days of the pandemic and with about six weeks of remote work under our belts, the MMA deployed the Q12, a validated and common employee engagement survey developed by Gallup. The results showed an overall mean of 4.37 (5 max), which placed the MMA in the 97th percentile. This outcome was gratifying and is something we hope to sustain, if not improve on.

Obviously, a lot has changed since May 2020. As a staff, we have been working remotely for more than one year and expect to continue doing so for up to an additional year. Like you, all of us have pandemic fatigue. Some staff and their families have yet to obtain COVID vaccines; inconsistent school routines challenge staff with young children; and we continue to adapt our work to meet the evolving needs of a membership subject to the vagaries of virus variants.

Yet working remotely in the face of a pandemic has forced us to reimagine how we serve members and, as a result, creativity has blossomed. We have leveraged Zoom and other technology to deliver timely information and education at a pace not previously seen; we have dramatically increased our visibility in the media and over social media channels; we have made it easier for physicians and trainees from all corners of the state to participate and share their opinions; we have launched new initiatives and formed new partnerships; and we have focused our advocacy for greater impact and relevance.

As a professional association, we take seriously our responsibility to use membership dues efficiently and effectively. I hope this peek under the MMA hood offers you some assurance of that. Most importantly, I hope that you can be proud of the highly motivated, competent and dedicated group of professionals working on your behalf to help make Minnesota the healthiest state and best place to practice. **MM**

Janet Silversmith
JSilversmith@mnmed.org

VIEWPOINT

Taking 'The Pulse' of members on policy development

In late June, the MMA will celebrate the first anniversary of a valuable engagement tool that is quickly gaining favor with our members. Called The Pulse, it's an innovative online policy development and polling tool that is designed to capture the ideas and opinions of MMA members.

As a membership-supported association, we are continually looking for ways to make it as easy as possible for our more than 12,000 members to get involved in matters of policy in areas of their interest. We also know that the way physicians were involved in the past—attending in-person meetings, sitting on committees, attending a House of Delegates—are less appealing for those of us with increasingly busy lifestyles, and can no longer be the path for participation in a 21st Century medical association. We also know that the strength of the MMA is in the diversity of our members, their interests and opinions—an attribute we, as leaders, are committed to embracing. There is no other professional physician organization in Minnesota that does what MMA does in scope and scale—bring physicians and physicians-in-training together, regardless of specialty, geography, practice model or political philosophy. You've decided to become a member because you believe in the MMA's mission. You know the value of our work as being "the leading voice of medicine to make Minnesota the healthiest state and the best place to practice."

The beauty of The Pulse is its simplicity. It is a tool to let every MMA member quickly, easily and on their own schedule influence the direction of MMA. Members can submit policy proposals for consideration by the MMA, vote prior to MMA Board action on policy proposals that have been submitted by other members or that have been proposed by MMA committees and provide feedback on decisions made by the MMA Board of Trustees. So far, about a half-dozen policies have moved through The Pulse. MMA staff notify members via email about proposals open for your vote and comments. Members simply click on the email link and can immediately offer their input. We've been averaging about 110 members weighing in on each issue so far—input from 110 more members than in the past.

Once members have given a proposed policy their thumbs up or thumbs down (literally—it's that easy), the vote tally and member comments are shared with the Board. At our April Board meeting, we had a robust discussion over three proposed policies, one submitted by an individual member and two by our Policy Council. After voting, members can also see results and can filter results by member type (i.e., regular active members, resident/fellow, medical student, retired physicians) and by geography, based on the six MMA trustee districts.

The MMA benefitted from similar work launched by the Colorado Medical Society and we are now working to share The Pulse with other state medical associations who have shown a keen interest in it.

A successful association must listen to and reflect its membership. I'm excited that The Pulse allows us to readily hear from you, our members, capture your input and expand the range of voices to help us develop the best policy possible to achieve our mission.

Please raise your voice the next time you receive an email regarding a policy submitted via The Pulse. We want to hear from you!

Stay safe and thank you for all you do in service of our mission of making Minnesota the best place to practice medicine in our unending journey to make Minnesota the healthiest state. **MM**

PHOTO BY KATHRYN FORSS

Edwin Bogonko, MD, MBA
MMA Board Chair

The beauty of The Pulse is its simplicity. It is a tool to let every MMA member quickly, easily and on their own schedule influence the direction of MMA.

Vaping, lung injury, and mental health in Minnesota 2018–2019

BY CORY COLE, MPH; TERRA WIENS, MPH; JOANNE TAYLOR, PHD; RICHARD DANILA, PHD; PAIGE D'HEILLY, MPH; JAMIE MARGETTA, MPH; MARIA BYE, MPH; ERICA MUMM, MPH; LAUREN SCHWERZLER, MPH; ROON MAKHTAL; STACY HOLZBAUER, DVM; AND RUTH LYNFIELD, MD

This report describes and contextualizes the high prevalence of mental health conditions (MHC) among Minnesota 2019 EVALI patients by examining the prevalence of MHC and associations between MHC and e-cigarette or vaping product (EVP) use in Minnesota population surveys.

Investigators reviewed medical records for 140 EVALI patients to determine history of MHC. History of MHC and EVP use in the general population was estimated using self-reported measures and screening tools from two population-based surveys, the 2019 Minnesota Student Survey (MSS) and the 2018 Minnesota Behavioral Risk Factor Surveillance Survey (MN-BRFSS).

Some 64.3% of EVALI patients had an MHC. In both Minnesota population surveys, MHCs were common among people who used EVP. The odds of MHC among youth aged <18 were higher among those who reported current EVP use compared with those did not report EVP use. Similarly, the odds of depression were higher among adults who reported current EVP use compared with those who did not.

Clinicians treating patients with EVALI should consider evaluating the need for, and providing indicated referrals to, post-discharge mental health services for their patients.

Introduction

A multistate outbreak of e-cigarette, or vaping, product-use associated lung injury (EVALI) was identified in the United States in summer 2019. During their investigation of the outbreak, Minnesota Department of Health (MDH) epidemiologists noted a high prevalence of underlying mental health conditions (MHC), including anxiety, depression, and other psychiatric diagnoses among confirmed and probable EVALI patients. Additionally, some of these patients noted during interview that they had been using e-cigarette, or vaping, products (EVP) with the intention of alleviating MHC symptoms. Finally, language about alleviating MHC symptoms was noted on packaging (Figure) of some EVP that EVALI patients had submitted to MDH's Public Health Laboratory for testing. All three of these observations from the outbreak investigation process raised questions not only about a potential association between MHC and EVALI, but about a potential association between MHC and EVP use in the general Minnesota population.

In order to better describe the prevalence of MHC among Minnesota EVALI patients, medical records for all 140 confirmed and probable patients were reviewed. In order to contextualize these findings with observations from the general Minnesota population, two population-based surveys, the 2019 Minnesota Student Survey (MSS) and the 2018 Minnesota Behavioral Risk Factor Surveillance Survey (MN-BRFSS), were used to estimate the prevalence of MHC and EVP use among youths and adults.

Methods

EVALI patients

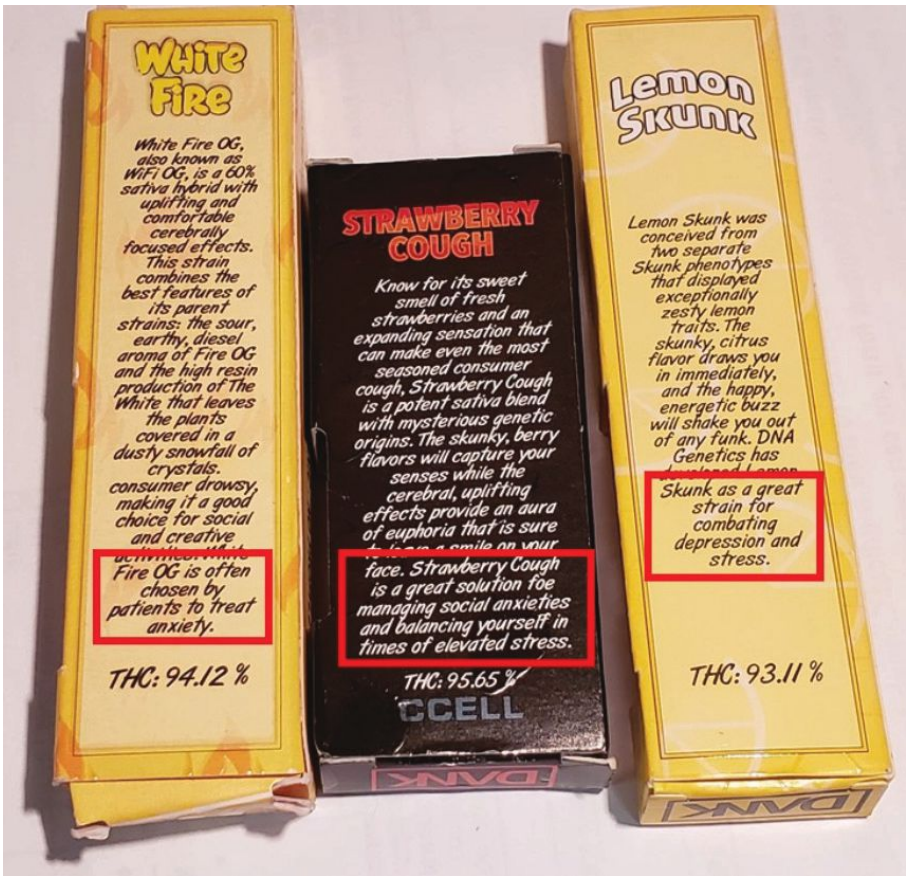
EVALI became reportable to MDH on August 12, 2019. During August 15–December 23, 2019, MDH interviewed EVALI patients or their proxies for cases reported by clinicians to MDH during August 8–December 16, 2019.[1] Patients were identified as confirmed or probable EVALI cases using the standardized case definition provided by the Centers for Disease Control and Prevention.[2] MDH also reviewed patient medical records to ascertain history of MHC, including anxiety, depression, and other psychiatric diagnoses, and history of medication commonly indicated for MHC. Other psychiatric diagnoses included attention-deficit/hyperactivity disorder, attention deficit disorder, specified and unspecified eating disorders, adjustment disorder, borderline personality disorder, post-traumatic stress disorder, bipolar disorder, panic disorder, obsessive-compulsive disorder, psychotic disorder, schizoaffective disorder, unspecified personality disorder, and schizophrenia. To reduce potential confounding, substance-use disorders were not counted as MHC.

Population surveys

Prevalence estimates of MHC and current EVP use (defined as an answer of "every day," "most days," or "some days" to the question, "during the past 30 days, on how many days did you use an e-cigarette or electronic vaping product?") among Minnesota school-attending adolescents were obtained from the 2019 Minnesota Student Survey (MSS).[3] MSS is a census-style statewide computer survey of fifth-, eighth-,

FIGURE

Examples of labels



Illicit tetrahydrocannabinol-containing e-cigarette, or vaping, product packaging submitted to the Minnesota Department of Health by e-cigarette, or vaping, product-use associated lung injury patients that specifically reference symptoms associated with mental health conditions.

ninth-, and 11th-graders conducted every three years in the spring. Survey responses from 125,228 students (response rate 64%) from grades 8, 9, and 11, who were between the ages of 12 and 19 years, were analyzed, including 624 (0.5%) students aged 18–19 years. Respondents were identified as having "any" MHC if they answered "yes" to the question, "Have you ever been diagnosed with a long-term mental health problem?" Anxiety and depression symptoms were assessed using the 2-Item Generalized Anxiety Disorder questionnaire (GAD-2) and 2-Item Patient Health Questionnaire (PHQ-2).[4,5] Anxiety or depression was defined as a score of ≥3 on the GAD-2 and PHQ-2, respectively.

Prevalence estimates of depression and current EVP use among adults were obtained from the 2018 Minnesota Behavioral Risk Factor Surveillance Survey (MN-BRFSS), an annual, state-based telephone survey of noninstitutionalized U.S. adults aged ≥18 years.[6] In 2018, a total of 16,990 people responded to MN-BRFSS (51.0% combined landline and cell phone weighted response rate). Current EVP use was defined as an answer of "every day," "most days," or "some days" to the question, "during the past 30 days, on how many days did you use an e-cigarette or electronic vaping product?" Respondents were identified as having depression if they answered "yes" to the question, "Have you ever been told you have a depressive disorder?" Appropriate indicators for "any" MHC and anxiety were not available.

Statistical analysis

Proportions of any MHC, anxiety, and depression by sex among EVALI patients were compared using Pearson's chi-square test ($\alpha = 0.05$). For both MSS and MN-BRFSS surveys, percentages and odds ratios (ORs) of self-reported MHC diagnoses and symptoms were calculated. MN-BRFSS data were weighted to account for the complex sampling design. We tested associations for effect modification by sex. For associations with evidence of effect modification ($\alpha = 0.05$), sex-stratified ORs were calculated. For associations without evidence of effect modification, ORs were adjusted for sex. All statistical analyses were performed using SAS® (version 9.4; SAS Institute, Cary, North Carolina).

Results

EVALI patients

During August 8–December 16, 2019, a total of 140 confirmed and probable EVALI patients were reported to MDH; median age was 22 years (interquartile range: 18–32.5 years), and 89 (63.6%) patients were male. Ninety (64.3%) EVALI patients had a history of any MHC; 75 (83.3%) of these 90 EVALI patients were prescribed at least one medication commonly indicated for MHC before seeking care for EVALI. Among 34 EVALI patients aged <18 years (range: 13-17), 61.8% had any MHC, including 58.8% who had anxiety, and 35.3% who had depression. Among these 34 adolescent patients, prevalence of any MHC, anxiety, and depression did not significantly differ between female and male patients (75.0% vs 50.0%, p = 0.13 [prevalence of any MHC]; 75.0% vs 44.4%, p = .07 [anxiety]; and 43.8% vs 27.8%, p = 0.33 [depression]) (Table 1).

Among 106 EVALI patients aged ≥18 years (range 18-75), 65.1% had any MHC, 54.7% had anxiety, and 50.9% had depression. Prevalence of any MHC was higher among adult women than adult men (85.3% vs 54.9%; p <0 .01), as was anxiety (76.5% vs 43.7%; p < 0.01), and depression (70.6% vs. 40.8%; p < 0.01) (Table 1).

Population surveys

Among all MSS respondents, prevalence of any self-reported MHC diagnosis, anxiety, and depression was 30.3%, 35.3%, and 27.6%, respectively, for females; and was 15.9%, 16.2%, and 16.8%, respectively, for males (Table 2). Among MSS respondents reporting current EVP use, prevalence of any self-reported MHC diagnosis, anxiety,

TABLE 1

Mental health conditions (MHCs) among 140 Minnesota patients with e-cigarette, or vaping, product-use associated lung injury, by sex and age — August-December 2019

	ANY MHC, INCLUDING ANXIETY, DEPRESSION, AND OTHER PSYCHIATRIC DIAGNOSES* (%)	ANXIETY (%)	DEPRESSION (%)
TOTAL	90/140 (64.3)	78/140 (55.7)	66/140 (47.1)
Prescribed medication commonly indicated for MHC, total	75/90 (83.3)	67/78 (85.9)	56/66 (84.9)
Prescribed MHC meds, male	48/89 (53.9)	39/89 (43.8)	34/89 (38.2)
Prescribed MHC meds, female	41/50 (82.0)	38/50 (76.0)	31/50 (62.0)
Prescribed MHC meds, other	1/1 (100)	1/1 (100)	1/1 (100)
Aged <18 years, total	21/34 (61.8)	20/34 (58.8)	12/34 (35.3)
Aged <18 years, male	9/18 (50.0)	8/18 (44.4)	5/18 (27.8)
Aged <18 years, female	12/16 (75.0)	12/16 (75.0)	7/16 (43.8)
Aged ≥18 years, total	69/106 (65.1)	58/106 (54.7)	54/106 (50.9)
Aged ≥18 years, male	39/71 (54.9)	31/71 (43.7)	29/71 (40.8)
Aged ≥18 years, female	29/34 (85.3)	26/34 (76.5)	24/34 (70.6)
Aged ≥18 years, other	1/1 (100)	1/1 (100)	1/1 (100)

and depression was 50.8%, 45.5%, and 52.9%, respectively, for females; and was 26.6%, 27.9%, and 26.5%, respectively, for males (Table 2). Among MSS respondents, 16% of male and 18% of female students reported current EVP use. Odds of any MHC diagnosis, depression, and anxiety were significantly higher among those who reported current EVP use (Table 2). ORs were higher among female students [any MHC: 2.97 (2.85, 3.11); depression: 2.46 (2.35, 2.57); anxiety: 2.73 (2.61, 2.86)] than among male students [any MHC: 2.22 (2.10, 2.35); depression: 2.26 (2.14, 2.39); anxiety: 2.21 (2.09, 2.33)] (Table 2).

Among all adult MN-BRFSS respondents, prevalence of depression was 17.6%. (Table 2). Among adult MN-BRFSS respondents who reported current EVP use, the prevalence of depression was 32.5% (Table 2). Among MN-BRFSS respondents, 5% of male and 2% of female adults reported current EVP use. Adjusting for sex, odds of self-reported depression were significantly higher [OR = 2.75 (2.20, 3.43)] among respondents who reported current EVP use, compared with those who did not (Table 2).

Discussion

Approximately two-thirds of Minnesota EVALI patients had evidence of a past medical history of any MHC. Among adult EVALI patients, MHC prevalence was higher among females than males. The majority of EVALI patients with MHC had been prescribed at least one medication commonly indicated for MHC before seeking care for EVALI. These findings reinforce CDC's guidance to clinicians that EVALI patients might benefit from evaluations for MHC to determine post-discharge support needs, including assuring social support and access to mental health and substance-use disorder services.[7]

Among respondents to the 2019 MSS and 2018 MN-BRFSS, both youth and adults who reported current EVP use were significantly more likely to report history or symptoms of MHC than those who did not report current EVP use. These findings align with those of other cross-sectional analyses that have investigated MHC and EVP use in large, population-based samples.[8,9] For example, among respondents to the 2016 National Health Interview Survey, those who self-reported MHC were 2–3 times more likely to report EVP ever use and current use, compared with respondents who did not report MHC.[7] In another large, nationally representative adult sample, Cummins et al. found that regardless of smoking status, respondents with self-reported MHC were

approximately twice as likely to have tried e-cigarettes as those without MHC.[8] The survey data collection tools referenced in these studies do not ask respondents to distinguish between nicotine-containing EVP use and tetrahydrocannabinol (THC)-containing EVP use.

An important limitation of this study is the inability of the 2019 MSS and 2018 MN-BRFSS survey instruments to distinguish between use of nicotine-containing EVP and THC-containing EVP.[1] Although the majority of EVALI patients reported using THC-containing EVP, MSS and MN-BRFSS respondents could have used mostly nicotine- or cannabidiol (CBD)-containing EVP. Therefore, we are unable to determine whether the high prevalence of MHC among EVALI patients and the association between EVP and MHC in the general population represent the same association. To more fully understand this association and its implications for population health, more research is needed to examine the role that specific EVP substances (e.g., illicit THC-containing EVPs vs nicotine-containing EVPs) play in the association with MHC. Additionally, because the study samples and data collection methods differ fundamentally from each other, prevalence of MHC should not be directly compared between samples. However, the similarity of findings within each of these disparate samples makes a strong case for an association between MHC and EVP use. Another limitation is the use of self-reported data to estimate the population prevalence of MHC. Because of social stigma around MHC, MSS respondents and MN-BRFSS respondents might have been less likely to report MHC. Similarly, EVALI patients may not have volunteered history of MHC to their physicians during lung-injury treatment.

Conclusions

Clinicians treating patients with EVALI should consider evaluating the need for post-discharge mental health services for their patients, especially if the patient reports having used EVP intending to manage MHC-related symptoms. These post-discharge mental health services could include assuring social support and access to mental health and substance-use disorder services. Further research is warranted to examine underlying factors driving the observed association between EVP use and MHC among the general population youth and adults. **MM**

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TABLE 2

Prevalence of mental health conditions (MHCs) and odds of MHC by e-cigarette or vaping (EVP) use 2019 Minnesota Student Survey (MSS)† and 2018 Minnesota Behavioral Risk Factor Surveillance Survey§ (MN-BRFSS)

MHC VARIABLE	SURVEY	AGE GROUP (YEARS)	PREVALENCE OF MHC AMONG ALL RESPONDENTS (%)	PREVALENCE OF MHC AMONG RESPONDENTS REPORTING CURRENT EVP USE (%)	PREVALENCE OF MHC AMONG RESPONDENTS NOT REPORTING CURRENT EVP USE (%)	CURRENT EVP USE Odds ratio (95% CI)
Any MHC	2019 MSS	12–19	Male: 15.9	Male: 26.6	Male: 13.7	2.22 (2.10, 2.35)
			Female: 30.3	Female: 50.8	Female: 25.8	2.97 (2.85, 3.11)
Anxiety	2019 MSS	12–19	Male: 16.2	Male: 27.9	Male: 14.0	2.21 (2.09, 2.33)
			Female: 35.3	Female: 45.5	Female: 31.3	2.46 (2.35, 2.57)
Depression	2019 MSS	12–19	Male: 16.8	Male: 26.5	Male: 14.6	2.26 (2.14, 2.39)
			Female: 27.6	Female: 52.9	Female: 23.4	2.73 (2.61, 2.86)
Depression	2018 MN-BRFSS	18–65+	Overall: 17.6	Overall: 32.5	Overall: 17.0	2.75 (2.20, 3.43) (Adjusted for sex)

† MSS is a statewide computer survey of fifth, eighth, ninth, and 11th grade students conducted every three years. Fifth graders were not asked about EVP use and not included in this analysis.
§ MN-BRFSS is an annual, state-based telephone survey of noninstitutionalized U.S. adults aged ≥18 years.

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GOLFER'S VASCULITIS

Exercise-induced vasculitis on the feet of a male golfer

BY JENNA L. RUGGIERO, BS; SARA A. HYLWA, MD; AND MATTHEW MANSH, MD

Exercise-induced vasculitis (EIV) is a small vessel vasculitis that commonly affects the lower extremities after strenuous activity. EIV is not an uncommon condition but is under-recognized. We present a case of EIV to bring awareness to this interesting diagnosis.

Case description

A previously healthy 51-year-old male presented with a painful, warm and spotted rash on his bilateral feet, which intermittently flared after physical exertion, such as long walks or playing golf, with the worst flare occurring after a day's-worth of walking around Washington D.C. Interestingly, the patient could play hockey and participate in triathlons without any flaring of the skin. He had no systemic or intestinal symptoms during these episodes, and the skin was without pruritus or bullae formation. His prior treatments included triamcinolone 0.01% cream and ibuprofen, which helped shorten the duration and intensity of symptoms. The rash always resolved on its own after approximately 5 days. Cutaneous examination revealed scattered, deeply pink, non-blanchable macules, small patches, and thin papules across the dorsal aspect of his feet and extending onto the ankles bilaterally (Figure 1). A clinical diagnosis of exercise-induced vasculitis was made, and he was treated supportively.

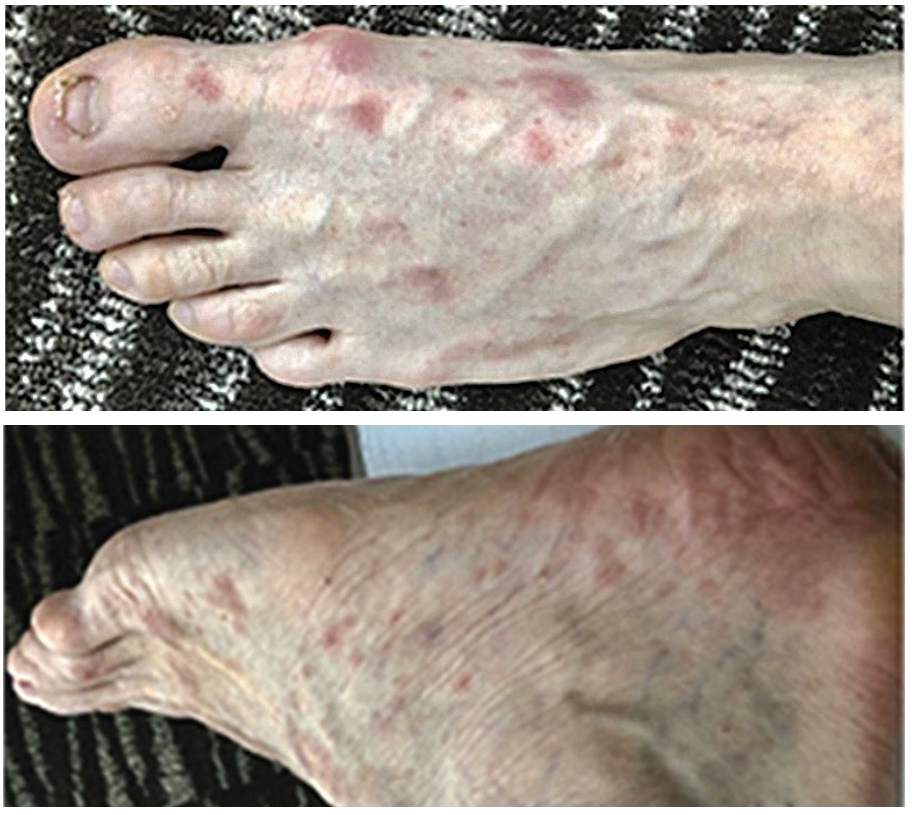

FIGURE 1

(A) Scattered, deeply pink macules and small patches on the dorsal foot; (B) extension to the ankle.

Discussion

Exercise-induced vasculitis (EIV) is a small vessel vasculitis of the lower extremities induced by exercise, typically lengthy walks, especially in hot conditions.[1] As extensive walking is the most common trigger, EIV is also referred to as golfer's rash, golfer's vasculitis, or the Disney rash. It occurs most commonly in healthy individuals over the age of 50;[2] however, it has been reported in children in association with sporting activities.[3] While many types of cutaneous vasculitis may be exacerbated by activity, EIV is induced by physical activity with complete skin clearance outside of the exercise. Kelly et al. studied 17 subjects with suspected exercise-induced vasculitis; the researchers found that most (15/17 patients, 88%) developed the rash after golfing. Notably, most of these golfers were involved in other physical activities, such as tennis, downhill/cross-country skiing, etc., without development of the rash. The authors attributed golf as the most common physical trigger because of the extensive walking over prolonged periods of time and because it is commonly played in warm weather.[2] The first case of EIV was described in 1996 in a woman with

urticarial vasculitis after physical exercise.[4] Since then, EIV has been increasingly recognized and reported.[1]

The pathogenesis is poorly understood and EIV is commonly misdiagnosed.[1] The diagnosis is clinical and laboratory investigation is typically normal, and therefore, unnecessary. Symptoms resolve spontaneously within 10 days and cases can be treated supportively. A trial of compression stockings, light clothing, topical or oral corticosteroids may be considered, but have no proven benefit in symptom reduction.[1,2] Other preventative measures include oral hydroxychloroquine, colchicine, or dapsone.

This case illustrates a classic presentation of EIV with a few uncommon features. EIV stereotypically presents on the lower legs, sparing areas compressed by socks.[1-3] A study of 23 patients diagnosed with EIV reported a female-predominance (22/23 patients) and only one patient with foot involvement.[1] However, here we show that the sock cuff and feet can be involved. Certain terrains, lack of shoe support, length of activity, and type of physical activity can trigger symptom onset, which is likely patient dependent, as illustrated by our patient case, where participating in hockey and triathlons did not trigger a rash. Studies have shown that most cases of EIV occur after a certain threshold of activity is met, such as 18 holes of golf or 3 hours of activity.[2]

We present this case to bring awareness to this benign, under-recognized, and interesting condition. Clinicians should consider EIV in any patient presenting with a skin eruption induced by physical activity, regardless of age, anatomic location, or type of physical trigger. **MM**

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EMPLOYMENT OPPORTUNITIES

KELIN SCHULTZ, MD

- OB/GYN with Ob-Gyn & Infertility, Maple Grove and Edina.
- MMA member since 2018
- Grew up in Duluth. Went to the University of Minnesota-Cities, then to medical school at University of Minnesota-Duluth. Residency in obstetrics and gynecology at the University of Iowa Hospitals and Clinics. Joined Park Nicollet after residency, then transitioned to private practice at OGI in 2017.
- Married to Brian Schultz. They have three children: Elise, Quinn and Coen, and a dog named Benny who is a Coton de Tulear, as well as a bearded dragon named Victor.

Became a physician because …

Growing up, I hated anything related to the body and actually pretended to be sick to avoid school so that I did not have to dissect a cow's eye—and I passed out during fifth-grade sex education. Instead, I had political aspirations and planned to go to law school. Thankfully, my career aspirations pivoted towards medicine late in high school. I had a wise dermatologist who made a positive impression on me. I also had a supportive anatomy teacher tell me that I would make a great doctor. They engaged my interest and, over time, I realized medicine was the path that was right for me. I became intrigued with the inner workings of our bodies. I love to learn; I knew medicine would engage my brain and that I would be able to continue to learn throughout my career. I felt that I would be able to advocate for patients on a personal level. And I wanted to help people live better lives.

Greatest challenge facing medicine today …

One challenge that faces physicians would be negotiating with payers. The larger the group the better negotiations and reimbursement. It becomes nearly impossible to succeed in an independent practice. The physician voice can be lost, the art of medicine can be diminished, the physician demands can be increased and the physician reimbursement can be decreased.

Favorite fictional physician …

I may have been better at answering this in my twenties. I don't watch a lot of TV/movies anymore (unless it's sports or Disney/animated) and I sometimes intentionally avoid medical shows, given that I live it real life. But I could name numerous real physicians that have become my favorites.

If I weren't a physician …

I would want to be a teacher. I am passionate about educating my patients and feel this alternate career would fit my strengths and fill my heart.

STACY COFFIN, MD, FASE

- Staff anesthesiologist, St. Luke's Hospital, Duluth.
- MMA member since 1995
- Born in Storm Lake, Iowa. Attended Robbinsdale High School, then the University of Minnesota-Twin Cities for both undergraduate and medical school. Started residency at the University of Iowa in internal medicine, but finished in anesthesia, then created a cardiac/echocardiography anesthesia fellowship. Was on staff at the University for several years, then moved to private practice in Duluth in 1995.
- Married to Shelley Breyen, MD, a family practitioner; they met in an honors seminar at the University of Minnesota 40 years ago. They have three children—all University of Minnesota graduates—who, with their spouses, live in Seattle, Minneapolis and Boston. Coffin commutes to work on his bicycle year-round, and was one of the first to introduce studded tires for winter riding in Duluth.

Became a physician because …

In high school, I worked in a nursing home as a janitor. I enjoyed taking the time to visit and occasionally dine with the residents. In college, I became a CNA, solidifying my desire to work directly with people. I thoroughly enjoy and value every life, especially the elderly, and felt I could help validate and improve their lives. During my first year as an internal medicine resident, I realized I was more suited for critical care medicine.

Greatest challenge facing medicine today …

I believe our society should have basic quality healthcare for all. As wealthy as our country is, there remain unacceptable inequities in healthcare. We need to resolve the racial, economic and LGBTQ+ disparities.

Favorite fictional physician …

Like my oldest, who proclaimed at age 7, "I prefer the non-fiction section of the library," I don't really have a favorite fictional physician. I have found real life is often stranger than fiction so I think I have not missed out on much. I do have high esteem for the many physicians who give their life and time truly caring for their patients, family and friends. There is nothing fictional about that.

If I weren't a physician …

I might have been a coastal environmental consultant, as I had planned to study oceanography in graduate school before I took the MCAT instead of the GRE. Or, perhaps I would be in international business, as I have always found a fascination with other cultures, countries and values as well as an interest in business.

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