THE JOURNAL OF THE MINNESOTA MEDICAL ASSOCIATION

MINNESOTA MEDICINE

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Lifestyle medicine

Nutrition, exercise, stress reduction ... it's all a basic part of the practice for this growing movement

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Minnesota Medical Association

MMA LGBTQ HEALTH FORUM

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MAY 15

Following its successful health equity forum in January, the MMA will host a forum on LGBTQ health.

Minnesota Medical Association

Forum objectives

- Raise awareness of the unique health needs of the LGBTQ community
- Raise awareness of the health disparities faced by the community and the root causes of those disparities
- Identify strategies for creating a welcoming, supportive and quality clinical environment for the community

Details

Tuesday, May 15

University of Minnesota Campus Club

Reception: 5 to 6 p.m.

Program: 6 to 8 p.m.

To register: visit www.mnmed.org/LGBTQForum

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Physician Advocacy Network, a project of Twin Cities Medical Society

MAFP Strong Medicine for Minnesota

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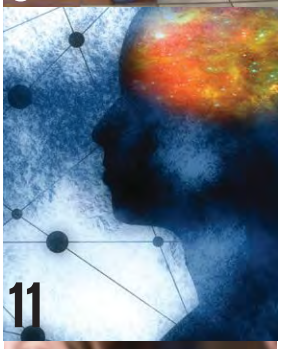

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PHOTO BY SCOTT WALKER

When patients listen

If we want to help people change lifestyle habits, we may need to offer examples rather than words

As I entered the exam room, I noticed a sort of smirk on the patient's face. After I greeted her, she blurted out, "did you notice?" I tried to hide my ignorance with silence until she said, "Did you look at my weight?" The vital sign flowsheet indicated a 10-pound weight loss since her previous visit three months ago. "That's fantastic! You are a poster patient," I exuded. "How did you do it?" As if I were asking the obvious of a child, she said, "I did what you told me." I now had to hide my surprise that a patient had followed my advice for lifestyle change.

What has been lacking in medical training is learning how to get patients to change their habits.

Physicians learn a lot of skills in their medical training. We learn how to auscultate the heart using a primitive instrument invented in the early 19th century. We learn to tease out the details of a patient's story to start the process of diagnosis. Some of us learn how to invade patients' bodies with scalpels and scopes to diagnose and cure. And we learn to choose the right pill, surgery or therapy to treat. What has been lacking in medical training is learning how to get patients to change their habits.

It's not that we don't know what habits are unhealthy. The perils of tobacco use, alcohol overuse, drug use and obesity have been known for decades and supportive evidence continues to flood the medical literature. In fact, most patients themselves realize that they shouldn't smoke, drink too much, take addictive drugs or eat too much. If patients and doctors are on the same page, why don't we see more 10-pounds-in-three-months success stories?

One explanation that surfaces frequently is that doctors ignore preventive medicine, shunning the slowly evolving causes of disease and instead focusing on the latest pill or procedure to treat the disease once it occurs. Certainly putting in coronary stents is glitzier than chasing down cholesterols with the slow slog of diet and exercise, but I think that physicians have slighted prevention because habits are so hard to alter.

And habits are poorly understood. Why do people start eating too much or take that first puff on a burning stick that brings nauseating smoke into their lungs? What does it take for them to "get the faith" and stop doing what is bad for them? After 40 years in practice, I am still baffled by why some patients "do what I told them" while most hear my broken-record mantra about the dangers of smoking, overeating or lack of exercise and come back unchanged at their next visit. When they do change, the reasons range from "one day the cigarettes just started seeming yucky" to "my children got on me" to "I wanted to fit in my dress for my daughter's wedding." Rarely do I hear, "Your rational explanation of the dangers of heart disease really struck a chord with me." I need a new tactic.

During my residency, one of the Mayo internists used to exercise with patients at 6:30 a.m. He had a good turnout of enthusiastic patients. Perhaps more visible devotion to healthy lifestyles by physicians or more lifestyle medicine doctors is what will produce more poster patients. **MM**

Minnesota Medicine Editor-in-Chief Charles R. Meyer can be reached at charles.073@gmail.com.

Rowing for fun, fitness and friendship

BY CARMEN PEOTA

Rowing is a lesson in patience and endurance for Joseph Alfano—and an antidote to the stress of the emergency department. It's also an incentive to get up early to see the sunrise, here on Lake Nokomis in Minneapolis.

The search for a social outlet brought Joseph Alfano, MD, more than he expected: a new passion.

Alfano had just ended a five-year relationship when he heard that a group was forming a rowing team for the 1998 Gay Games in Amsterdam. Alfano, then 39, thought it might be fun to join them—and that he might meet new people. "To be honest, the reason I started rowing was I was looking for a team sport as a social outlet," admits the medical director of emergency services for Fairview Lakes Medical Center.

The "team" hired a coach, who taught them how to row. And Alfano, who had never before competed in any sport, went off to Europe for the competition involving thousands of athletes from around the world. Although he didn't come back with a medal—or a new romance, he had a new passion. "That was my first regatta, and I got hooked," he says.

All in

The other rowers put away their oars after the games, but Alfano joined the 100-plus-year-old Minneapolis Rowing Club and began learning the sport in earnest. "It takes many years to become any good, especially if you come to it later in life," he says.

Although it looks like a simple formula of oars, rowers, boat and water, rowing is anything but. The stroke is difficult to master, as it both balances the shell (boat) and propels it through the water. Shells are 25- to 50-foot-long strips of composite material with keels (bottoms) about a foot long, all of which means shells don't stay upright on their own. Balance is up to the rowers. On top of that, the oars are long—between 11 and 12 feet for sweep rowing (each rower using one oar) and about 9 feet long for sculling (each rower using two oars).

A common misperception about rowing is that rowers use their arms. In fact, about 80 percent of the power of the stroke comes from pushing with the legs, made possible by the sliding seat. "A rowing race is essentially several hundred squats," Alfano says. Rowing also engages other parts of the body, especially the core—necessary to maintain the crucial forward body angle when going up and down the slide. And all of this also requires intense mental focus. Lapses in concentration will lose a race. Subtle changes in posture, grip, handle height, timing and power application all affect balance and speed. When there are multiple rowers in a shell, which can hold

as many as eight, the goals are synchronization and uniformity. "You can watch Olympians do it, and it looks easy and beautiful," Alfano says, "and you watch inexperienced rowers do it, and you see how hard it is."

Alfano stuck with his newfound passion, rousing himself at 4:30 a.m. to make it to early-morning practices on the Mississippi River between April and October. Winter training revolved around cross-training and the rowing machine—the ergometer—which rowers call "the erg." During the summers, he went to regattas in Boston, Winnipeg, Thunder Bay, Amsterdam and elsewhere, where he competed in in singles, doubles, quads, fours and eights races.

About 10 years in, Alfano started feeling proficient. Mastery, he notes, is a lifelong quest: "Putting the oar in the water at exactly the right time on the recovery, then the smooth application of power while keeping the blade buried at just the right depth is the holy grail of rowing."

Better balance

At one point, Alfano realized he might be investing too much in rowing. "There was a period of time I just put aside my other friends more than I should have, for four or five years, focusing on rowing all of the time. It's such a consuming sport," he says. He has since pulled back—a little—gaining perspective on how the sport fits into the larger scheme of his life. "I'm never going to be an Olympic rower. I'm not built as an elite-level rower. I'm a 'little lightweight,' at 150 pounds. I'm only 5 feet, 10 inches. I'm too small," he says. "I don't care—I love it."

He recognizes that rowing is good for him, as it provides an antidote to stress. "The ED is a fairly high-stress environment. Any kind of athletic training, any kind of fitness, helps build resilience," he says, adding that for him, rowing now is "absolutely about resilience." It also gets him outdoors. "It's magical to be out on the water by 5:30 or 6 a.m. in the summer on the Mississippi and see bald eagles fishing."

The sport has taught him special lessons. "I call it the Zen of rowing," he says. "You go faster by going slower. If you rush up the slide [the rails on which the rower's seat rests], you upset the boat or you slow the boat down. You think you're rowing hard, but you're rowing inefficiently." It's a lesson about patience that has been especially applicable to him as he's assumed a leadership role. "As a leader, you can't force things to happen. You have to spend a lot of time listening and gathering information and allowing things to evolve."

Rowing has, indeed, provided the social outlet he sought two decades ago. He's been involved in the rowing community, serving as the Minneapolis Rowing Club's secretary and on its board of directors. More recently, he's competed with another club, 612 Endurance Rowing. "I didn't find a boyfriend through rowing, but I found an awful lot of friends," he says.

And Alfano has introduced rowing to other friends, too. One is the art historian (and dancer) who became his boyfriend and then partner. "He's become hooked, too," he says. "Unfortunately, he's faster than me." **MM**

Carmen Peota is a Twin Cities freelance writer and editor.

Joseph Alfano (second from right in the far boat) raced with a team from the 612 Endurance Rowing club in the master's quadruple sculls at last year's North West International Rowing Association championship on Lake Phalen.

Helping patients care for themselves

BY SARA LINDQUIST, MD

Research has shown that an activated patient has better health outcomes and lower costs of care. This is a benefit not only to patients, but also to physicians and other practitioners who feel the stress of not being able to meet all their patients' needs.

It takes a village to care for a patient. We have medical homes, care coordinators, diabetes educators, registered dieticians, office assistants, triage nurses. One in four Americans lives with multiple medical conditions and they come to the clinic with multiple issues, both their own and those their health care provider would like to address. Caring for patients in the time constraints of a busy primary care clinic is harder than ever, and the current healthcare environment is not conducive to educating patients on how to care for themselves once they leave the clinic. One common frustration for most health care providers is that patients often don't seem invested in their own health.

It's hard to help patients who don't have the tools or motivation to help themselves. It's clear that patients get better outcomes if they actively participate in their own health. Too often, the assumption is that the medical community has all of the answers. The natural result of that assumption is that the patient tends to sit back and expect us to solve the problem. We need to change that expectation. We will get the best results if a patient's care is a shared responsibility. Most everyone agrees that healthcare needs to change. What if some of that change comes from the way patients take care of themselves?

In 1979, Kate Lorig, then a graduate student in public health at the University of California, Berkeley, arrived at Stanford to research and develop an educational program that emphasized self-help skills for people with arthritis. As a result of her successful work, a series of evidence-based health promotion (EBHP) programs were developed to help people with chronic illness and their caregivers manage their symptoms, improve their quality of life and reduce healthcare costs. After initially being licensed and made available through the Stanford Patient Education Resource Center, these EBHP programs, also referred to as chronic disease self-management education (CDSME), are now licensed and available through the Self-Management Resource Center (selfmanagementresource.com) and are offered throughout the United States and in many other countries.

In Minnesota, Area Agencies on Aging (AAA) and its local partners have been offering the CDSME programs, in addition to other EBHP programs geared toward diabetes and fall prevention, across the state since 2009 in conjunction with the Minnesota Board on Aging. Two years ago, Metropolitan Area Agency on Aging (MAAA) received a grant to build on the initial work with the EBHP programs to create an initiative that would allow them to increase their capacity for delivering these programs across the state. MAAA has been working in collaboration with all of Minnesota's Area Agencies on Aging to offer EBHP programs statewide. As this project has grown and developed, it has adopted the brand "Juniper."

The name "Juniper" was selected as a symbolic reference to the juniper plant, which is a long-living, hardy evergreen with a history of valuable medicinal and protective properties. Herbal uses of juniper date back to Greek and Arabian physicians of the 1500s. Native Americans have long considered juniper to have healing properties. Juniper berries have been regarded in many cultures as a symbol of longevity and strength.

The Juniper initiative delivers EBHP programs to help adults manage chronic health conditions, prevent falls, foster well-being and maintain independence as they age. These programs, delivered through

Tai Ji Quan can help seniors reduce their risk of falling by improving their strength, balance, mobility and daily functioning.

PHOTO PROVIIDED BY THE METROPOLITAN AGENCY ON AGING

a network of local leaders, community organizations and health systems, provide education, fitness instruction and self-care strategies for participants; they do not replace clinical care provided by doctors, nurses and other medical professionals. Participants are encouraged to follow up with their primary care providers for any health-specific questions and instructed how to communicate more effectively with their provider.

Juniper has so far been successful in building program-delivery capacity of EBHP programs in all regions of the state, working with key stakeholders and service delivery organizations to train leaders and identify participants who would benefit from these programs. Current programs offered through the Juniper initiative include:

- Living Well with Chronic Conditions (Tomando Control de su Salud is the Spanish language version).
- Living Well with Chronic Pain.
- Living Well with Diabetes (Programa de Manejo Personal de la Diabetes is the Spanish language version).
- Diabetes Prevention Program.
- A Matter of Balance.
- Stepping On.
- Tai Ji Quan: Moving for Better Balance.
- Stay Active and Independent for Life.
- Arthritis Foundation Exercise Program.

While the work of Area Agencies on Aging is geared primarily toward a senior population, Juniper's evidence-based health-promotion programs are open to adults of any age who have chronic conditions or who are at risk of falling.

With a recently launched management information system, yourjuniper.org, Juniper is the single destination for program information geared towards consumers, health care providers and class leaders, as well as program contracting for payers and partners. This online system should enable greater visibility of Juniper programs to potential participants, any individuals making referrals of potential participants and those interested in offering programming either as a service delivery organization or as a trained leader. The system supports a single point of contracting for program delivery to risk-based populations both in local communities and statewide. With the new management information system, Minnesota's Area Agencies on Aging hope to be able to expand the scope and capacity of Juniper programs across the state.

Participant feedback regarding Juniper classes has been positive. When asked what has changed in her life as a result of the Living Well with Diabetes program, one participant says, "I learned to acknowledge my feelings, how to plan and to write goals down. I learned about the difference between portions and serving sizes. Now I see the importance of balancing food intake and exercise and how it affects my blood sugar levels."

A Matter of Balance, developed by MaineHealth, is a fall-prevention program that teaches strategies to overcome the fear of falling. It includes a supervised exercise component where participants set realistic goals for further increasing activity. A 62-year-old participant shared his story: "A Matter of Balance has been very valuable to me. It's taught me how to walk in a balanced way and how to integrate strengthening and flexibility into my everyday life. Now I flex my ankles as I stand in line at the bank and incorporate strengthening activities in things I do

EDITOR'S NOTE

GOOD PRACTICE is a regular feature in *Minnesota Medicine*. If your practice—large or small—is doing something innovative, unusual or particularly effective, please share it with our readers. Contact Linda Picone, editor of *Minnesota Medicine*, at 612-362-3758 or lpicone@mnmed.org with your ideas.

Many Juniper classes are led by people who share language and culture with those in the community.

PHOTO PROVIIDED BY THE METROPOLITAN AGENCY ON AGING

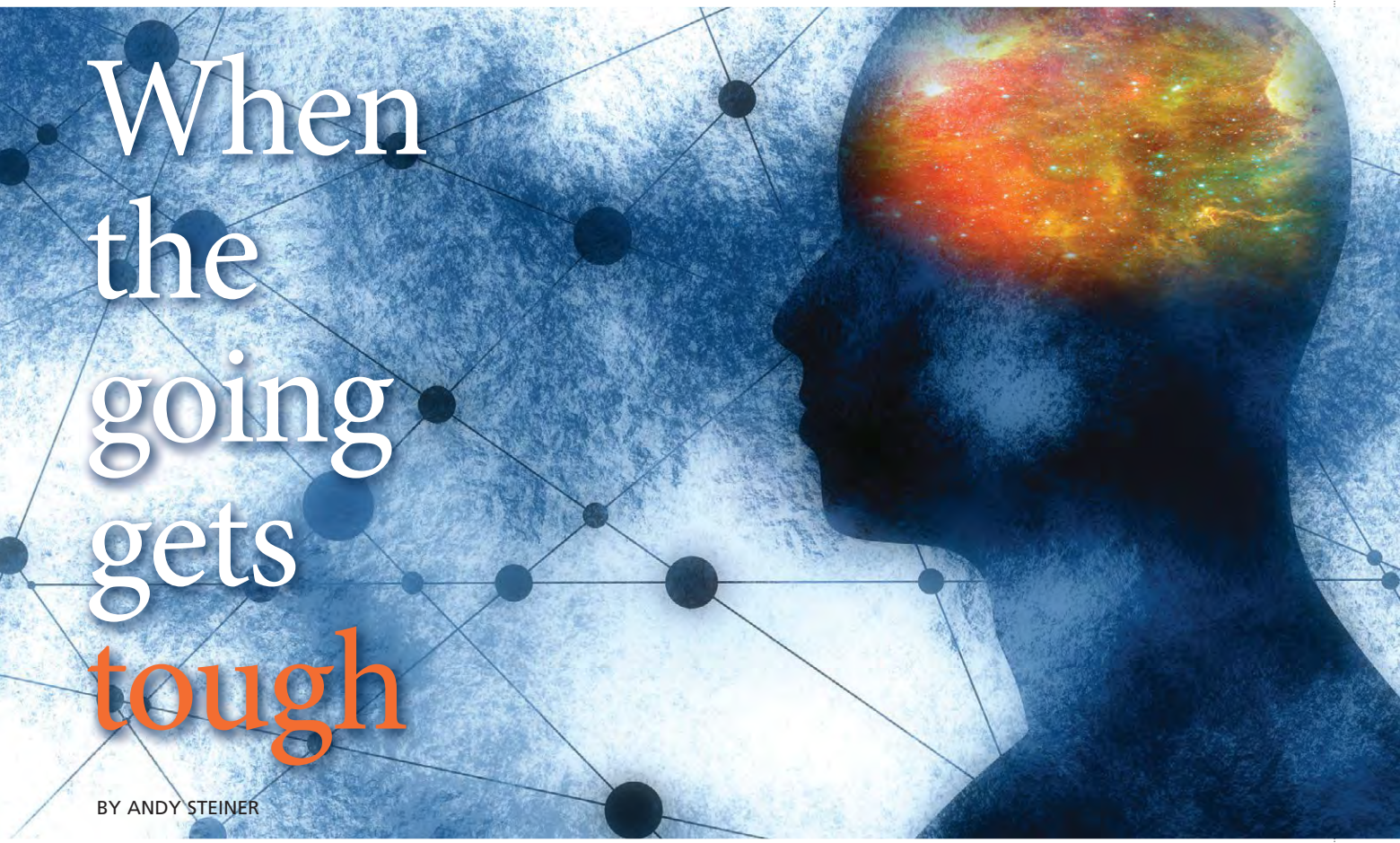
throughout my day. Additionally, the flash cards I received as a part of the class have made it easy for me to do the exercises regularly on my own." Participants are taught how to be more assertive in getting their needs met to maintain an active lifestyle. After completing the class, a 60-year-old woman says, "I like to travel with two friends who are quite a bit younger than me. We recently planned a trip to San Antonio and the Riverwalk is really crowded! I had to 'let go' a little and told my friends that I needed a handrail and to take breaks. I had to tell myself: 'You're going to ask for help or you're not going!'"

Tai Ji Quan: Moving for Better Balance, developed by Fuzhong Li, PHD, at the Oregon Research Institute, is an exercise-focused class designed to improve strength, balance, mobility and daily functioning, reducing participants' risk of falling. One participant says, "Tai Ji Quan taught me to be intentional about where I put my feet, how to ground myself and how to stop myself if I fall." Another participant says, "I was walking with a cane for a couple of years. After I joined the class, I am able to walk without a cane." A class leader says, "I've had several people from [the] classes indicate that they were walking in their homes or apartments and came upon something that would have created a fall. By using the 'pelvic tilt' that we practice, they were able to regain their balance and avoid a fall."

Classes are taught in community settings by trained lay leaders who may have many of the same conditions as the participants. Some classes are offered in Spanish. A participant in Tomando Control de su Salud, offered at the Latino community center Centro Tyrone Guzman in Minneapolis, says the program helped her regain her health and get back to enjoying life. "I learned so much in the class—about the importance of eating smaller portions, how to cook differently, to drink more liquids and not to get discouraged." During much of the class time, participants are talking to each other: "We share our fears, our difficulties, our success, and we support each other. Our class leader makes us feel like family. I have gotten to know so many people. I feel connected here. It's my community. They help me stay focused on healthy habits and keep me well." A class leader at Centro says, "It makes a big difference to be surrounded by people who share your culture and speak your language. Having the classes led by people from the community is so much more powerful than having a translator." Yolima Chambers, the administrator for the Health and Wellness Department at Centro says, "most of our elders have chronic conditions. Isolation is a big problem in our communities. Working with Juniper is a natural fit for us. We want to be proactive in helping people address concerns and the Juniper programs do that. They are preventative, use a holistic approach and are based on research."

In 2015, 283 classes were offered statewide. In 2017, 555 classes were offered, an increase of 96 percent. Since 2015, more than 6,500 participants have completed EBHP programs in Minnesota. A Juniper goal is to be able to offer programming to potential participants within 30 miles of their location and within 30 days of a referral. Juniper staff are working to increase access to programs across the state by raising awareness among practitioners about Juniper programs and encouraging them to incorporate referrals into their daily clinical practice. **MM**

Sara Lindquist, MD, is director of Healthcare Integration for Juniper. She is board-certified as an internist and geriatrician and worked at Park-Nicollet Clinic for eight years.



When the going gets tough

BY ANDY STEINER

Why do physicians work when they're ill themselves? Maybe it's their training, maybe it's their sense of responsibility to their patients… or maybe they just don't want to look like they can't handle it.

Sofia Ali, MD, was in the thick of residency when she came down with a stomach bug. In the middle of the night (technically, early in the morning), she started to feel miserable. If that sounds bad, it only gets worse: Ali was on duty at the hospital, only halfway through her shift.

Exhausted and feverish, she assessed her options.

"I'm already at the hospital," Ali told herself. "It's 3 in the morning. I'm throwing up, but who's going to come in and work?"

Because she felt she had no other choice—and because she'd been trained to think that you needed to be tough to make it in medicine—Ali kept working. She'd heard of other residents getting IV fluids to combat nausea, but she didn't go that far. She washed her hands obsessively and soldiered on, taking precautions not to pass the illness on to her patients.

"I just pushed on and waited for the day to end," she says.

A small part of Ali felt proud of her tough response but, by the end of her shift, it became clear that she wasn't fooling anybody.

"I was treating this elderly lady who'd broken her leg," Ali recalls with a chuckle. "She took one look at me and said, 'You don't look very good, dear.' That's when I realized I'd probably pushed it too far."

Others first

Stories like Ali's aren't all that unusual in medicine: Though they have dedicated their careers to helping patients get and stay healthy, some physicians find it hard to take care of their own health. For a variety of reasons, many physicians feel like they need to work through sickness—at least when the illness isn't highly communicable.

Some of that attitude may come from their singular focus on patients. Laurie Drill-Mellum, MD, an emergency medicine physician and chief medical officer of the malpractice insurance collective Constellation, says such short-sighted selflessness is part of the package.

"In general, physicians are taught to take care of other people, not themselves," she says. "You don't want to let your patients down. Somebody made an appointment to see you because they have a health concern: If you are ill, canceling that appointment could result in delaying their care. There is a not a lot of elasticity in the system. When a physician calls in sick, everybody in the clinic is doing more with less."

There's no question that physicians focus on their patients, but they face pressure to keep their partners in practice happy. Anand Shah, MD, regional medical director for HealthPartners, is interested in issues of physician resiliency. He says that some doctors tend to press on when ill because they don't want to disappoint their colleagues.

When a physician misses work, it takes a team effort to cover for them, Shah says. "When your partner is sick, you do your best to accommodate their patients, but the reality is that it usually ends up being double the work for everyone."

HealthPartners, Shah says, tries to give physicians the message that it is important to take care of their physical and mental health. Sometimes that means taking a sick day.

"We speak with all new clinicians about the symptoms of burnout," he says. "We encourage them to take care of themselves and build their own resilience."

That said, even Shah admits that he has a hard time calling in sick.

"When I am sick, I'm not thinking of myself," he says. "I'm thinking of everyone else. I make sure I don't have anything that I could easily pass to my patients. If I'm not highly contagious, I will more likely think, 'How can I get to work?' not 'Should I go to work?'"

The decision to go to work when sick is generally left up to the individual. The Minnesota Department of Health (MDH) does not have an official policy regarding physicians working while ill, says spokesperson Doug Schultz: "This is more a matter of best practices among the medical industry. We certainly would advise physicians, just like we advise non-medical people, if at all possible not to work while they have an infectious disease. It is important for their health as well as the health of their patients."

Schultz says MDH strongly encourages physicians to check with occupational health or infection-control specialists at their facilities about any policies they may have regarding physician illness.

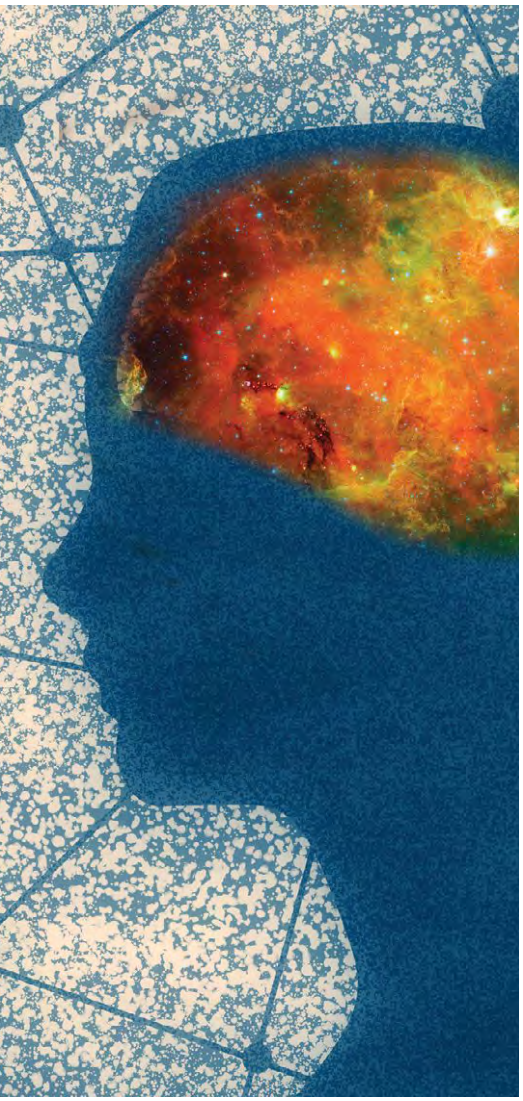
If physicians feel they must work while ill, the MDH cautions that they should take measures to prevent spreading infection, like washing their hands frequently and wearing a face mask if possible.

> "When I am sick, I'm not thinking of myself, I'm thinking of everyone else."
>
> – ANAND SHAH, MD

Bred in the bone

Some physicians think that taking sick time is a sign of weakness. It's an attitude that gets drilled in at the very beginning.

"If you think about our training process, which basically is inhuman—working



100-hour weeks in residency, now down to something like 80 hours a week—it doesn't surprise you that physicians feel they have to work through illness," Drill-Mellum says. "We are trained to deny our own physical and emotional needs."

That attitude may be shifting. Ali, who works as a family physician at United Family Medicine Community Health Center in St. Paul, says that she'd never work through a stomach bug again.

While she thinks she's lucky that at her clinic, rescheduling patients or moving them to an open spot on one of her partner's schedule isn't all that difficult, she also believes that her willingness to take time off when needed has been good for her physical and mental health.

When she is sick or has a family conflict, Ali says she tells herself, "The world is not going to stop if I'm not there. If I'm sick, I just call in. Our clinic is really good about saying, 'We'll move people around and make it work, or we'll cancel your schedule.'"

It's not as if Ali takes a day off at the first sign of a sniffle.

"If I'm a little sick, I just tough it out," she says, "but if I'm sick-sick, I stay home. I know I'll actually not be of much use to anybody."

Drill-Mellum says that Ali's attitude reflects the fact that she came up in an era when attitudes about physician health were starting to improve.

"Younger physicians who have worked under residency hour restrictions may not put up with as much as some of the older physicians like me have," she says. And even physicians like herself, who regularly gut their way through most illnesses, are now taking a second look at that attitude and appreciating just how important it is to truly care for their own health—and that of their colleagues.

Take this story for instance: About six years ago, Drill-Mellum arrived for a shift at the ER when she learned that a close friend had died. She was distraught, but she assumed she'd still work her shift.

"I went into the doctors' room and started getting into my scrubs," Drill-Mellum recalls. "One of the nurses came back and said, 'You shouldn't be working today.'"

It was about 10 minutes before Drill-Mellum's shift was to begin. "I said," she recalls, "'No, I can do it.' This is how we are trained. The nurse said, 'Laurie, I think it is a bad idea for you to work. You are not going to be as good of a doctor to your patients if this is going on in the background.' I said, 'You're right. Let's call backup.'"

While the problem that sent Drill-Mellum home was not contagious, it did have the potential to negatively impact her patients. That was enough for her to ask a partner to come in and take over her shift—something she'd never done before. It was also enough to get her thinking about the importance of members of a health care team supporting each other in times of personal crisis.

"The attitude used to be, 'When the going gets tough, the tough get going,'" Drill-Mellum says. "I think that lately that attitude may changing. We're realizing that there are different ways to be tough. That's a good thing for doctors—and for their patients." **MM**

Andy Steiner is a Twin Cities freelance writer.

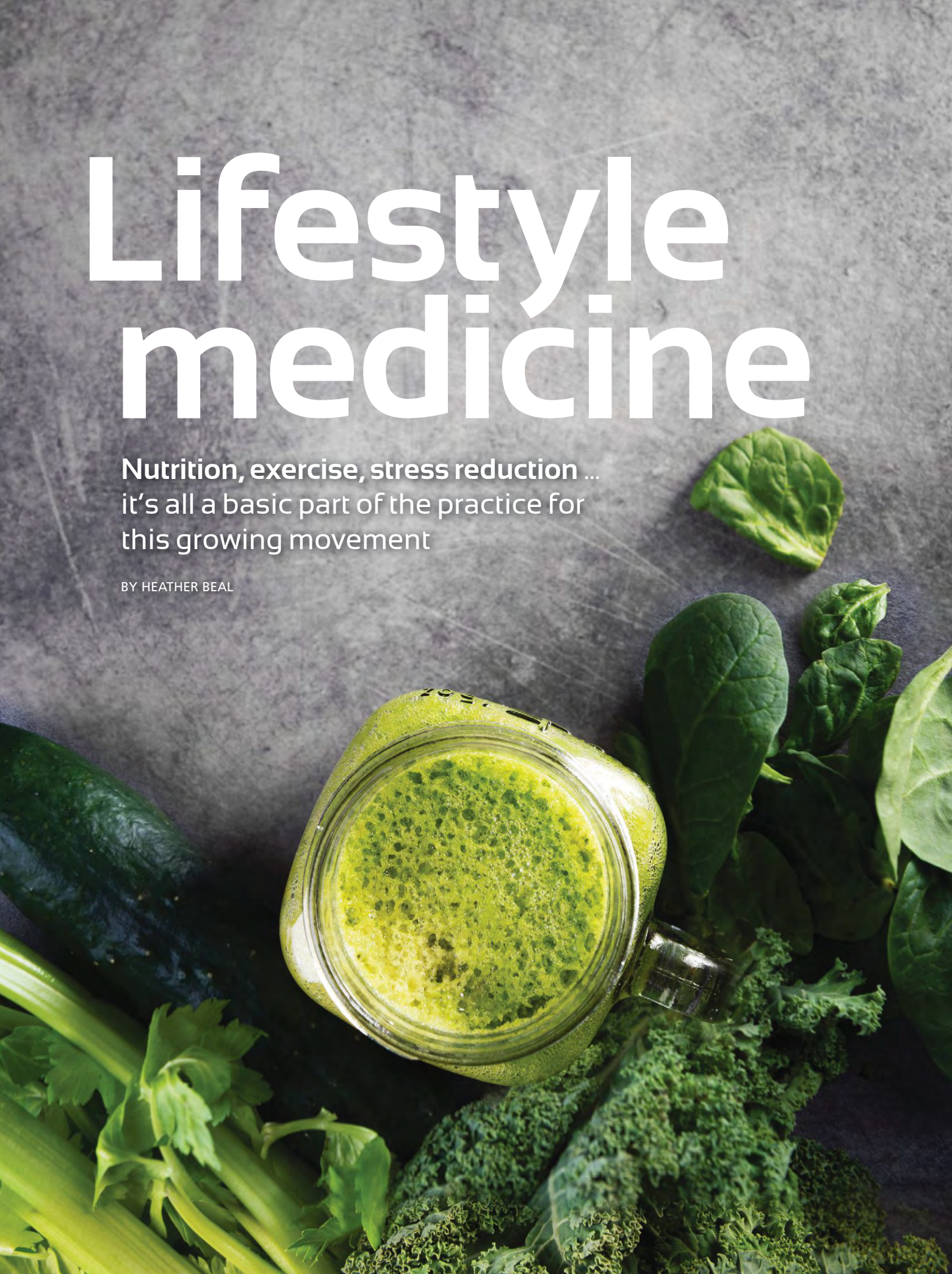
EDITOR'S NOTE

Life in Medicine is a new regular feature in *Minnesota Medicine*, focusing on what it's like to be a physician in Minnesota today. If you know a physician who is particularly interesting, or if you have something to say about your life as a physician, or if there's a lifestyle issue you and others face that's complicated because you're a physician (what do two-physician households do for childcare when both are on call? for example), contact Linda Picone, editor of *Minnesota Medicine*, at 612-362-3758 or lpicone@mnmed.org with your ideas or your personal essays.

Lifestyle medicine

Nutrition, exercise, stress reduction ... it's all a basic part of the practice for this growing movement

BY HEATHER BEAL



Health care costs in the United States continue to rise, but overall health is not going along with that increase:

- A 2017 study by Rand Corporation found that 60 percent of American adults now live with at least one chronic condition, with 42 percent experiencing these as comorbidities.
- In 2015, the National Institutes of Health Funding for Behavioral Interventions to Prevent Chronic Diseases reported that treating people with chronic conditions already accounted for 84 percent of annual health care expenditures in the United States.
- In January 2018, The Centers for Medicare & Medicaid Services reported that health care spending now accounts for nearly 18 percent of our nation's gross national product (GNP).

Research, some new, some decades old, indicates that many common conditions can be prevented, ameliorated or even "cured" with changes in lifestyle. Exercise, nutrition, stress-reduction, social connections, avoidance or limits on drug and alcohol use—and quitting smoking—all make a difference for some patients in everything from helping prevent adult-onset diabetes to reducing or eliminating joint pain to ending insomnia.

The idea is to address lifestyle, not just disease. But the definitions of "lifestyle medicine" are as varied as the health care professionals who practice it.

What is lifestyle medicine?

The sheer number and variety of professional and academic medical organizations involved in developing a lifestyle medicine specialty help to explain why physicians who have already integrated its strategies into patient care view it through different prisms.

For example, the American Board of Lifestyle Medicine (ABLM) has "four pillars of lifestyle medicine"— nourishment, movement, resilience and social connectedness—and the American College of Lifestyle Medicine (ACLM) has "6 Ways to Take Control of Your Health," both of which overlap with the "seven modifiable personal lifestyle factors" of functional medicine, the principles of integrative medicine and core tenets of health and wellness programs developed by medical institutions, such as the Mayo Clinic's "12 Habits of Highly Healthy People."

The American College of Preventive Medicine (ACPM), which played a leadership role in establishing the Lifestyle Medicine Standards, states that it "believes lifestyle medicine is a core competency of preventive medicine." Physicians boarded in preventive medicine generally echo this belief—with some reservations—viewing lifestyle medicine as a subset of what they have been taught and the care they are currently providing.

"My route to preventive and occupational medicine was through sports medicine" says Ralph Bovard, MD, MPH, FACSM, director for HealthPartners Occupational Medicine Residency Program, "So, my focus has always been on healthy lifestyles—coming from an exercise-physiology background. What we do under the aegis of occupational and preventive medicine is provide guidance for healthy life choices."

Bovard is concerned that creating a new subspecialty could "splinter the preventive medicine mission," but he also feels "lifestyle medicine is an important part of the conversation because most physicians in preventive medicine advocate for primary versus secondary or tertiary prevention."

"I encourage people to exercise five hours a week," Bovard says. "I advocate strongly for the silent sports, such as cross-country skiing, swimming, cycling, rowing, running, hiking, kayaking and canoeing. These activities all involve the rhythmic and symmetric use of large muscle groups and challenge the cardiovascular system. They are also relatively low-impact activities that help preserve joint function."

Natalie Gentile, MD, a family practice physician at Mayo Clinic, is one of the first four doctors in Minnesota to be board-certified in lifestyle medicine. Gentile says she believes doctors practicing family medicine have a "unique opportunity to intervene with evidence-based lifestyle changes at all stages of chronic disease in the context of their social influences" because they care for people from cradle to grave.

"I try to talk to most of my patients about lifestyle medicine in some way," she says. "If it's a visit about their chronic disease care, it's an opportunity to look at ways that their habits affect compliance, disease markers and quality of life. If it's an acute care visit, there is an opportunity to plug for healthier lifestyle habits—even in the constraints of a shorter visit."

She says these discussions are best done in the form of motivational interviewing, "meeting the patient where they are at the time and assessing their readiness for change." She typically refers patients to nutritionist colleagues and, if appropriate, behavioral health colleagues. "It is imperative to have these ancillary staff as part of our medical team to ensure that patients have the best set-up for success," Gentile says.

Zeke McKinney, MD, MHI, MPH, assistant residency director for HealthPartners Occupational and Environmental Medicine, says he also addresses lifestyle issues because much of occupational medicine focuses on prevention.

"Lifestyle medicine uses a quintet approach to practicing medicine that covers exercise, sleep, nutrition, social connectedness and mental health/well-being," McKinney says. "I address all of these with my practice. For example, sleep apnea is a big issue for the pre-employment exams I do to certify people to drive commercial motor vehicles. I don't want someone falling asleep behind the wheel. So, I look for signs that show somebody is at

risk for sleep apnea—such as obesity and neck circumference. Hypertension and snoring are also associated with it. I ask: 'has someone said that you snore loudly or stop breathing when you are sleeping?' If I identify enough risk factors, I may refer a person to see a pulmonologist to have a sleep study done."

Although the strategies of lifestyle medicine are similar to those of functional medicine, Thomas Sult, MD, who founded 3rd Opinion in New London, makes a clear distinction between the two.

> The definitions of "lifestyle medicine" are as varied as the health care professionals who practice it.

"Lifestyle medicine is generally population-based medicine," Sult says. "I practice personalized medicine. I use the ideas of lifestyle medicine but apply them specifically and uniquely to each individual. For example, if a patient tells me 'I have rheumatoid arthritis,' my questions are: 'Why? What's different and unique about you? How do your lifestyle and environment differ such that you ended up getting RA?'

Sult uses the Functional Medicine Matrix. Across the bottom of this matrix are the modifiable personal lifestyle factors: sleep and relaxation, exercise and movement, nutrition, stress, relationships. "I look at these factors first because they form the foundation," he says. "If someone is only sleeping three hours a night, they aren't going to get better. Then I build on that by identifying antecedents, triggers and mediators and determining how all of these factors are related."

Gregory Plotnikoff, MD, MTS, FACP, also begins by seeking to understand how patients' lifestyles and other factors may be affecting their health. Plotnikoff founded Minnesota Personalized Medicine, an integrative care clinic in Minneapolis.

"We specialize in treating people with complex, chronic and undiagnosed illness," he says. "We begin by addressing the Five Fundamentals—breathing, eating, sleeping, moving, connecting/loving—and the Five Forms of Stress—environmental, physical, emotional/spiritual, pharmaceutical, dietary. So, my definition of lifestyle medicine is a clinical practice that recognizes, values and addresses these fundamentals before prescribing pharmaceuticals."

Plotnikoff points out, however, that it takes more than identifying how lifestyle behaviors influence patients' health to work with them effectively.

"It's important to understand their beliefs, meanings and interpretations," he says. "If you aren't aware of these, you can be blindsided by them—or a patient may just not do something. So, I'm most interested in what is behind a behavior. I'll ask: 'Tell me what you enjoy most about smoking.' If you learn that every time someone gets in a fight with their rambunctious teenager, a smoke is really good, you know it's going to be very hard for that person to quit smoking if those battles continue."

Since he and many of his professional colleagues already address lifestyle factors and make evidence-based recommendations, Plotnikoff wonders why a lifestyle medicine specialty is needed. "Shouldn't this already be part of primary care?"

He is not alone.

"Why not just call it good medicine?" asks Kambiz Farbakhsh, MD, MBA, founder and medical director of the Lifetime Proactive Care Clinic in St. Louis Park. The 3P Model he employs—"proactive, preventive and personalized care"—focuses on nutrition, exercise and the mind. "If you call it lifestyle medicine," he says, "that implies other physicians aren't considering these factors."

"Historically, patients have been left to navigate the barriers to health behavior changes alone," says Paul Anderson, MD, at HealthPartners West Clinic. "The lifestyle medicine provider not only helps people decide 'what' is needed, but takes the time to help patients figure out 'how' to change and regularly checking in with them on progress. Lifestyle change is the central component of lifestyle medicine, whereas many specialists and primary care providers need to spend their time focused on acute and chronic problems that arise from managing disease conditions."

The ABLM's response to these questions is unequivocal, stating that the rationale for creating a lifestyle medicine certificate is to:

- Educate interested physicians, health and allied health professionals about lifestyle medicine.
- Differentiate between evidence-based and non-evidence-based lifestyle practitioners.
- Attract funding for evidence-based lifestyle medicine by requiring that any fund receivers be formally certified.
- Establish a common, global standard and language for lifestyle medicine protocols.

In early March, the ACLM and ABLM announced that 204 physicians and 43 PhD/Masters-level health clinicians had won the first certification in lifestyle medicine.

Need for education

The research related to the core competencies of lifestyle medicine is growing so rapidly that many physicians find it challenging to sift through the data and studies, synthesize what they've learned and properly respond to the questions patients bring to clinic visits.

"This is the 21st century," Farbakhsh says. "People bring in all kinds of test results all the time. Most doctors have not been trained to interpret and apply results from some of the new tests. It's like being in beautiful Paris and you can't speak the language. Should your reaction be: 'Why did you bring me to Paris? I'm comfortable in the United States because I speak English.' The

place isn't bad. It just means you have to learn to speak the language."

He says he greets new information patients present with full transparency.

"If I know a test is reputable, I will tell patients I trust it," he says. "If I don't recognize it, I say: 'I will check this out and get back to you.' If after doing research I feel a test is bogus or it is good, I will give the patient my opinion. As a doctor, it is my job to determine which data are important, what tests are necessary."

Both Plotnikoff and Sult have found certain genetic test information to be useful for customizing their professional recommendations.

"Behind the upfront information are about 650,000 data points that can be very helpful for looking at everything from neurotransmitter pathways to metabolic and detoxification pathways," Plotnikoff says. "In the past, people thought genes were destiny. Now they realize genes by themselves account for very little of our health. What really matters are genes and environment. This is the new incarnation of lifestyle medicine—recognizing that key elements in our lifestyle can positively or adversely affect gene expression."

Sult says he usually recommends genetic tests after ruling out lifestyle factors. "For example, if someone has high homocysteine, I may recommend increasing the green leafy vegetables in their diet." he says, "If that doesn't work, they may need more folic acid. If that doesn't work, there may be a genetic uniqueness in this individual and we'd do some SNP (single nucleotide polymorphisms) testing."

Studying the impact of lifestyle factors on health has led some physicians to question some standard medical metrics. For example, Bovard and McKinney are collaborating on a research project that, in part, compares body composition to body mass index (BMI) as indicators of obesity.

"Half of on-duty deaths for firefighters are related to cardiac disease," McKinney says. "So, we are developing a cardio-respiratory risk surveillance score using information such as body fat percentage, maximum oxygen consumption and other factors."

PHOTOS PROVIDED BY MAYO CLINIC

HISTORY OF lifestyle medicine specialty

Increased concern about lifestyle factors impacting health and the growing body of scientific evidence demonstrating the positive impact lifestyle interventions can have in combating chronic illness led to the establishment of the Institute of Lifestyle Medicine (ILM) in 2007, a nonprofit founded by Dr. Edward Phillips at Harvard University to focus on "reducing lifestyle-related death and disease . . . through clinician-directed interventions."

In July 2009, national experts in nutrition, exercise, and lifestyle medicine and top-level representatives from the following organizations convened to discuss how to codify the lifestyle medicine strategies physicians across different disciplines were recommending and garner consensus competencies:

- American Medical Association (AMA)
- American Osteopathic Association (AOA)
- American Academy of Family Physicians (AAFP)
- American College of Physicians (ACP)
- American College of Preventive Medicine
- American Academy of Pediatrics (AAP)

Leaders from the ILM and the American College of Lifestyle Medicine (ACLM) also participated. The ACLM was founded in 2004 as the professional medical association of health professionals "interested in learning more about lifestyle medicine and advancing its mission."

In its tenets, the ACLM states that it is "the therapeutic use of evidence-based lifestyle interventions to treat and prevent lifestyle-related diseases in a clinical setting" and that "Lifestyle Medicine empowers individuals with the knowledge and life skills to make effective behavior changes that address the underlying causes of disease."

In November 2015, the American Board of Lifestyle Medicine (ABLM) was founded as the independent certifying body in charge of credentialing physicians in Lifestyle Medicine. The ABLM exclusively proffers the certification of "Lifestyle Medicine Physician" to medical doctors and osteopaths who are previously boarded in another ABMS-recognized specialty.

The ACLM grants certification as a "Lifestyle Medicine Professional" to chiropractors, doctors of nursing, psychologists, occupational therapists and others with a PhD or master's degree in a health or allied health discipline.

"One problem with using BMI as a form of measurement is that it produces 20 percent false positives and 20 percent false negatives," Bovard says. "Most firefighters appear to be more physically fit than their BMI would suggest. We feel that VO2 max and body composition are more important metrics for assessing a person's health. If we can develop a tool that helps us better predict cardio-respiratory risk factors it could provide a way to incentivize people. If you can say 'If you drop 10 pounds then you can move to a different quartile,' they can envision the effect that their lifestyle choices can make."

The principles, strategies, scientific evidence and practice of lifestyle medicine are topics rarely included in medical school curricula, but this is changing. In September 2013, the University of South Caro-

FIND OUT MORE ABOUT lifestyle medicine

There are a variety of ways physicians and allied health professionals can gain the knowledge they need to promote healthy lifestyles. Classes, seminars/webinars, and the complete curriculum needed to prepare for American Board of Lifestyle Medicine (ABLM) or American College of Lifestyle Medicine (ACLM) Lifestyle Medicine certification exams are available online and "live."

The first place physicians interested in becoming board-certified in Lifestyle Medicine should check for CME content and providers approved by the ABLM is on its web site at https://ablm.co/cme-providers.

Conferences and courses provided by the ALCM/ACPM and the Institute of Lifestyle Medicine are among those in the ABLM's approved list. More information can be found at:

- https://www.lifestylemedicine.org/Lifestyle-Medicine-Core-Competencies-Program
- https://www.lifestylemedicine.org/Lifestyle-Medicine-Conference
- http://www.instituteoflifestylemedicine.org/education-2/continuing-medical-education

Online training

The American College of Preventive Medicine (ACPM) and ACLM partnered to develop and offer the Lifestyle Medicine Core Competencies Program online via the ACLM's website.

According to the ACLM, this new evidence-based program "provides a comprehensive foundation for physicians and allied health professionals who are interested in learning the basic principles of lifestyle medicine."

It specifically addresses knowledge and skill gaps cited by physicians as major barriers to counseling patients about lifestyle interventions.

Each ACLM Lifestyle Medicine module is accredited for Continuing Medical Education (CME) credit. The full course, which comprises nine modules, is designated for 30 AMA Category I Credits TM.

Certain medical specialties, such as preventive medicine and family medicine, offer MOC Part II CMEs. Other medical specialty boards are currently reviewing the ACLM's program for "maintenance of certification" (MOC) credit.

The ABLM has also approved this program so its modules count toward completing the 30 hours of online CME study that is a prerequisite for becoming board-certified in Lifestyle Medicine.

Certification

In the United States, certification for lifestyle medicine physicians is issued by the ABLM. To certify as a lifestyle medicine physician, you must:

Be board-certified by a medical specialty board that is recognized by the American Board of Medical Specialties (ABMS) or the American Osteopathic Association (AOA.

Be credentialed as a physician in your country of residence.

Complete 30 online and 10 live CMEs, plus submit a case study outlining personal experience with lifestyle medicine

lina's School of Medicine (Greenville) and the Institute of Lifestyle Medicine at Harvard Medical School held a brainstorming session that ultimately led to creation of the Lifestyle Medicine Education Collaboration (LMed).

LMed provides leadership, guidance and resources to medical school administrators, faculty and students who are interested in incorporating lifestyle medicine into the medical education curriculum. It also addresses the importance of self-care for health professionals.

Scientific evidence and funding

Linking the principles and practices of lifestyle medicine to scientific evidence is expected to increase the likelihood of reimbursement from insurers for practitioners who are board-certified in this specialty.

Currently, tight time limits for clinic visits and low reimbursement rates for counseling patients about lifestyle changes make it difficult for physicians to integrate this into their clinical work unless they practice in a specialized area of medicine, such as executive or tertiary care.

"Generally, everything I've discussed about lifestyle medicine is not reimbursed by Medicaid or health insurers," McKinney says. "That's because medicine is in a transition from volume-based care, where doctors who do more exams and procedures earn more, to value-based care, which focuses on providing the right care for the right patient."

Plotnikoff, Sult and Farbakhsh work with hybrid reimbursement models in which patients pay out-of-pocket for services not covered by health insurers. Minnesota Personalized Medicine tells patients in advance that it does not participate in any insurance program, but, at the end of each appointment, patients receive a "super bill" that they can submit to their health insurer for consideration of partial reimbursement.

A common language and standards

The fact that existing medical specialties have developed five-, six-, seven- and even 12-part models to address lifestyle factors highlights the need for a common language and standards.

The ABLM's "resilience" pillar illustrates this point well. It refers to a range of strategies aimed at helping people effectively manage and recover from life's challenges. While the ACLM's category of "stress management" may seem to fit into this category, some physicians view these as related, but separate issues.

"Resiliency is our mind-body area," says Donald Hensrud, MD, MPH, director of the Mayo Clinic Healthy Living Program. "We consciously didn't use the phrase 'stress management' because there are many different modalities that can be used to improve resiliency. These range from getting good sleep to meditating or doing yoga or tai chi."

Others agree that mindfulness is important for developing and strengthening resiliency, but they focus first on how it can be used to reduce stress.

"Although we say that we focus on nutrition, exercise and the mind, the mind comes first," Farbakhsh says. "During the annual physical examination, I show patients different forms of meditation and breathing techniques. Why? Because with the mind you can balance your hormones, reduce stress and direct how you want your body to heal. It is a well-known fact that stress destroys your body's ability to heal itself."

Plotnikoff also incorporates mindfulness into his clinical practice. "I believe the best answers are found rather than given. So, I begin with awareness exercises and guided self-assessments. "The first question I ask people is: 'What would make this a really good visit for you today?' I want to know what their agenda is. Then I may ask: 'What would you most like me to know about you as a person?' This is all about building relationships and customizing care for people. In some sense, knowing these things tells me something about the lifestyle someone leads."

Sult, who is writing an online course about optimal wellness and a spiritual connection, says: "A significant number of my visits are less about the biochemistry and more about the psycho, social, spiritual aspects of health and well-being."

All physicians interviewed agreed on the importance of social connectedness for achieving optimal health and wellness.

Bovard says he addresses this topic by encouraging patients to exercise with other people. In 2015, he collaborated with Paul Anderson, MD, MPH, and others to study the relationship between social support and the health behaviors and status of endurance of 5,000 Nordic skiers participating in The American Birkebeiner Nordic ski race. "The study results demonstrated that the social aspect of sporting commitment and goal-setting plays a huge role in motivating individuals to remain physically active."

Conclusion

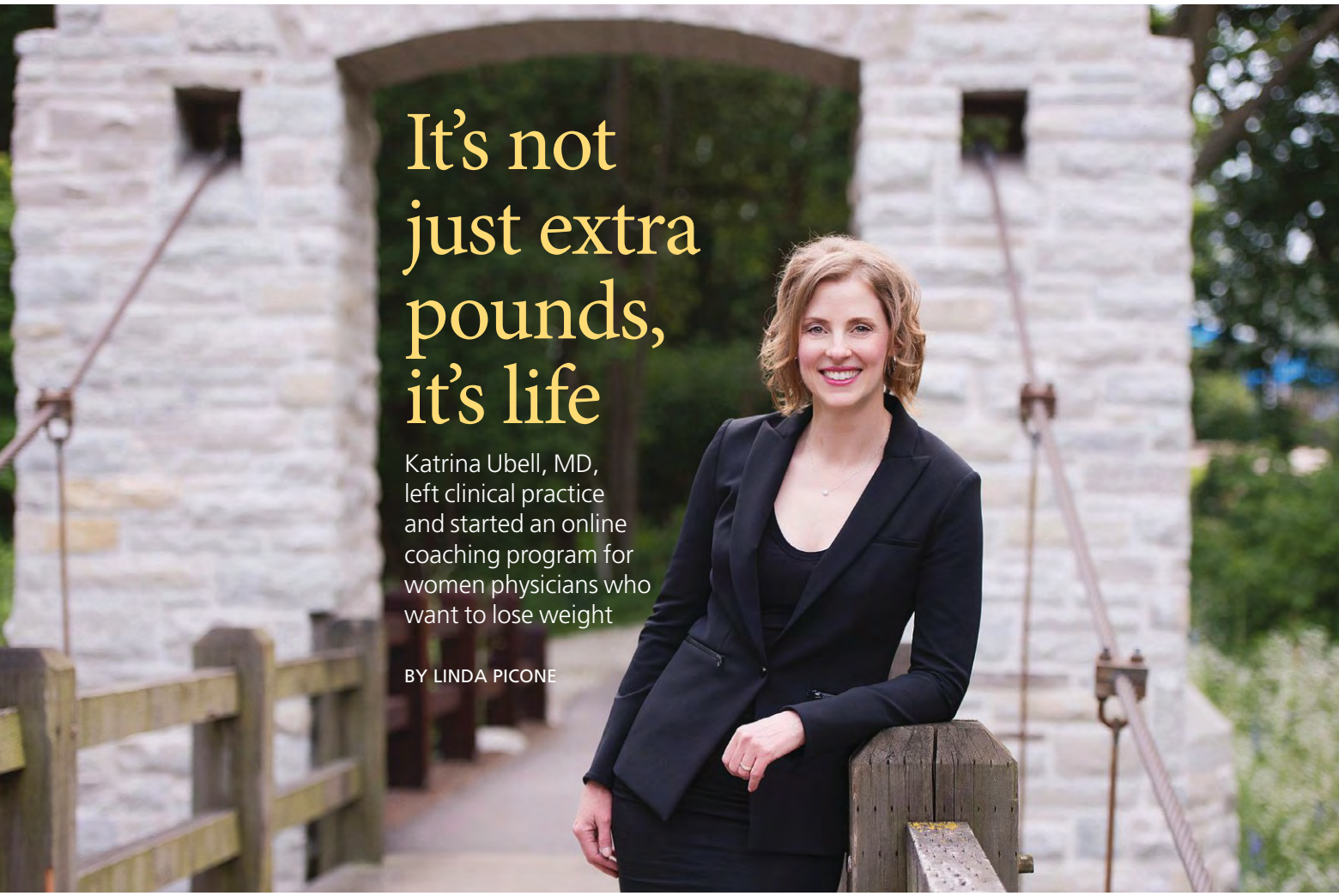
Last year, the decade-long, concerted effort to define, codify and legitimize lifestyle medicine reached a major milestone when the first board certification exam for this medical specialty was held.

While physicians continue to debate and discuss the need for a separate lifestyle medicine specialty, they generally agree the work done to create it has been valuable because it is helping to shift the focus of the U.S. health care system from treating diseases toward preventing them.

This shift not only holds the potential to improve health outcomes and enhance quality of life, but also is expected to reduce the crushing burden that health care costs are putting on the U.S. economy.

"This lifestyle medicine movement is important because if we are going to solve this we need as many people as we can to get on board," Hensrud says. "We need more evidence, more systems, more effective programs and more reimbursement to support lifestyle medicine." **MM**

Heather Beal is a Twin Cities freelance writer, specializing in health, wellness and design.



It's not just extra pounds, it's life

Katrina Ubell, MD, left clinical practice and started an online coaching program for women physicians who want to lose weight

BY LINDA PICONE

Katrina Ubell, MD, knows how to help women physicians in clinical practice not only lose and control their weight, but, more important, deal with stress in their lives because she's one of them. She was part of a busy pediatric practice for 10 years before leaving and becoming an online coach.

Like many Americans, pediatrician Katrina Ubell, MD, turned to food when dealing with stress. And the life of a physician in clinical practice is full of stress. "So I had my own experience of gaining weight, losing weight, gaining weight, losing weight," she says.

Ubell's struggle with stress, eating and weight led her to leave her practice, to start an online coaching program and to offer help to others like her: women doctors in clinical practice who wanted to lose weight.

And, not incidentally, to create a business that almost immediately became successful beyond her expectations.

Leaving her practice

The letters MD after Katrina Ubell's name were hard-won, and she's proud of them. She had a successful pediatric practice in Wauwatosa, Wisc., and she loved working with her patients and their families. She and her husband, Matthew Ubell, MD, have three children, now ages 12, 6 and 4.

But when Ubell turned 40, "I started thinking about what I wanted for my life. I was having a hard time coming up with reasons to stay in practice. I loved the patient care, but there was all the outside stuff you deal with in a practice. Life wasn't what I thought it would be."

She'd been in practice for 10 years and decided she needed a break. She gave her partners six months to replace her and planned "to let the wind blow me." She had no real idea what might come next; she just knew she'd have more time with her family—a priority for her.

A couple of years before she left her practice in 2015, Ubell had worked with a friend who was training to be a life coach. Ubell found it interesting, and tucked the idea away for the future. Once she was no longer in practice, she decided to try training as a life coach herself. "When I signed up with my coach, she was offering business coaching with it," she says. "I also signed up for an intensive weight coaching program—and I lost 50 pounds."

Starting the business

The two ideas—starting a business and losing weight—came together for Ubell.

"When I was in practice, I remember Googling 'weight loss for doctors' and not coming up with anything," she says. "There seemed to be this gap, this missing piece. I thought there might be a few people out there who would be interested.

"Lo and behold, there are a *lot* of people who are interested."

Ubell did her life coach training in 2016 and started Weight Loss for Busy Physicians online in 2017. "Two months after starting my podcast in early 2017, my coaching calendar was so full I had to create a wait list," she says. Once the idea of weight loss geared specifically to women physicians hit a Facebook group for physicians who are mothers, she says, she knew it would take off. And it did.

The program

There are three key components to Doctors Only, Ubell's group coaching program:

- Membership to an online site where participants get videos and worksheets to help them apply the content they've just learned to their own lives.
- An online live video call each week with anyone in the group who can link in. It's recorded, so those who miss the live call can see it later. "You really can't overestimate the value of watching other people being coached," Ubell says.
- Using the SLACK app, a place for each participant to post daily "thought downloads," food journals and weight, which no one but Ubell sees, and to take part in discussion groups that focus on their particular interests and needs. At least one discussion group is held without Ubell, so participants have a chance to talk about the program and any concerns without worrying about hurting her feelings.

Ubell also has a growing set of podcasts, available on iTunes, which are available to anyone at no cost. These introduce people to the program and, for non-physicians, offer an opportunity to take advantage of Ubell's coaching.

Ubell has two groups running at a time, with about 50 participants in each. The program lasts six months for each group. Over a year, then, roughly 200 women physicians may take part.

Ubell doesn't provide the cost on her website and prefers to discuss that with potential participants in a discussion after they have listened to several podcasts. It is a substantial cost—definitely not Weight Watchers—but it is a one-time fee, unlike some weight-loss programs that charge weekly or monthly fees with no end point. "My clients have told me they would happily pay four times as much for the amazing results they've gotten," Ubell says.

Having been a physician in clinical practice influences Ubell's work and the skills that made her a good pediatrician also make her a good coach, she says: "I had a kind of talent for taking complicated medical concepts and being able to explain them quickly and in a way patients could understand. I can basically do that here as well. I am not afraid to talk to people about difficult subjects, always from a place of love. 'I love you, but this is what you need to know.' When you work in practice for a long time, you know how to develop a relationship of trust quickly. That's what I do now."

> *When I was in practice, I remember Googling 'weight loss for doctors' and not coming up with anything.*

She does not practice medicine as part of the program, however: "I don't operate in the form of a physician. I do not provide medical advice or medication."

The heart of the program

Although the program has "weight loss" in its title, Ubell and others say it's much more than that. "My clients tell me, 'The weight loss is great and all, but the best part is that all my relationships

(continued on next page)

are better, I actually enjoy my work again, and I know how to set goals for myself and achieve them,'" says Ubell. "That's really what it comes down to. So much of it is not eating for emotional reasons. Really learning how to show up in the world as a full adult. Taking full responsibility for the experience of your life."

Laura Raffals, MD, a gastroenterologist at Mayo Clinic, got interested in Ubell's program when she had a hard time getting rid of 10 to 20 pounds after having her second child. She wasn't overweight, but the usual exercise, running and altered diet didn't seem to make a difference. She listened to some of Ubell's podcasts and was intrigued. "It wasn't the usual 'change what you eat and exercise,' it was that you have to change your relationship with food," she says.

"What I learned through working with Katrina is that my emotional eating is always driven by two things: fatigue and stress at work," Raffals says. "Her next step with me was to figure out how I manage those. She insists that we all journal and she wants us to meditate—and I was so resistant. She wore me down. It ended up probably those two things have been the biggest life-changing things ever."

When she completed the program, Raffals had lost more weight than her goal and, she says, "My husband says I'm more relaxed than I've ever been since he's known me. The weight loss is great, but that is probably the least important thing that I gained out of this. The biggest thing was to just be more aware of stress; I didn't realize I was stressed. Now I'm just a little more aware of what emotions I am experiencing."

Krista Olsen, MD, an ob/gyn with Obgyn Specialists of Edina and Burnsville, learned about Ubell's program from a patient—a non-physician. "She had lost about 30 pounds since I'd seen her the previous year," Olsen says. "I asked her how she did it and she told me she had started listening to this podcast. I wrote it down on a Post-it note on my desk and didn't look at it for about two months."

> *"You've been able to do all these things, overcome all these challenges ... but there's this* one *thing you can't conquer.*

Olsen, who started the program in January this year, said she recommends the podcasts to a few patients, several of whom have had success with the podcasts alone. "A patient I told about four weeks ago came in and gave me a big hug and started crying," Olsen says. "She'd lost 5 pounds and gone down two pant sizes by listening to the podcast."

Like many who struggle with their weight at some point, Olsen had tried a number of things over the years. "I would try to exercise or eat differently for four or five weeks, but nothing ever stuck." So far, she's been quite successful with weight loss, but is happy about more than that.

Olsen said she thinks there's some social shaming about weight among physicians—even if it's in their own heads. "You've been able to do all these things, overcome all these challenges, getting into medical school, finishing medical school, getting a residency … but there's this *one* thing you can't conquer."

Now, she says, the program "has totally given me freedom from perseverating about my weight at work."

Raffals and Olsen said Ubell makes them work hard while they're in the program. "She expects a lot of you," says Raffals. "She makes you dive in deep to discover what your triggers for eating are."

Ubell says many participants are able to get to their goal weight by the end of the program or, if they still have weight to lose, "I make sure they know what they need to do to get to their goal. They know how to manage their thinking, how to create a goal, how to adjust eating to get to results."

As with anything, though, Ubell says, if someone doesn't want to participate and follow her advice, she can't make them. Most, having made the significant investment of money and time, are inclined to fully take part.

What's next

Right now, Ubell only works with women physicians in clinical practice. That not only reflects her own experience, it makes business sense. "In online business, those who do well are people who are speaking to a specific client," she says.

"Physicians, we are our own little breed, and only we get it," Ubell says. "Many of my clients are moms. You have a group of very like-minded people who understand each other's problems."

Raffals and Olsen agree that being part of a group of physicians has turned out to be important to them. "We all shared similar struggles," says Raffals. "There was a lot of coaching on time management, dealing with expectations of patients, the demands of practice. Even just managing how we eat around these chaotic schedules."

But the requests from non-physicians—and the potential of an expanded business—mean that Ubell is thinking about how she might scale up in the future.

"I really love what I'm doing now," she says. "I'm in complete control. I have the ultimate flexibility." But, she says, she knows that she will need to make room for something else, a new challenge.

In the meantime, she is enjoying working while her children are in school, then being with them full-time when they're home. She doesn't work weekends—"I'm very strict about that"—and she even gets time to herself. "In my old practice, I didn't even have my own office. I can see now why that was challenging for me." **MM**

Linda Picone is editor of *Minnesota Medicine*.

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Doctors' Lounge!

Enjoy networking with your colleagues at a free, casual event for physicians, residents and medical students.
The Doctors' Lounge is designed to thank MMA members, and welcome new and potential members.

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ST. CLOUD
Thursday, May 10
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102 6th Ave S.

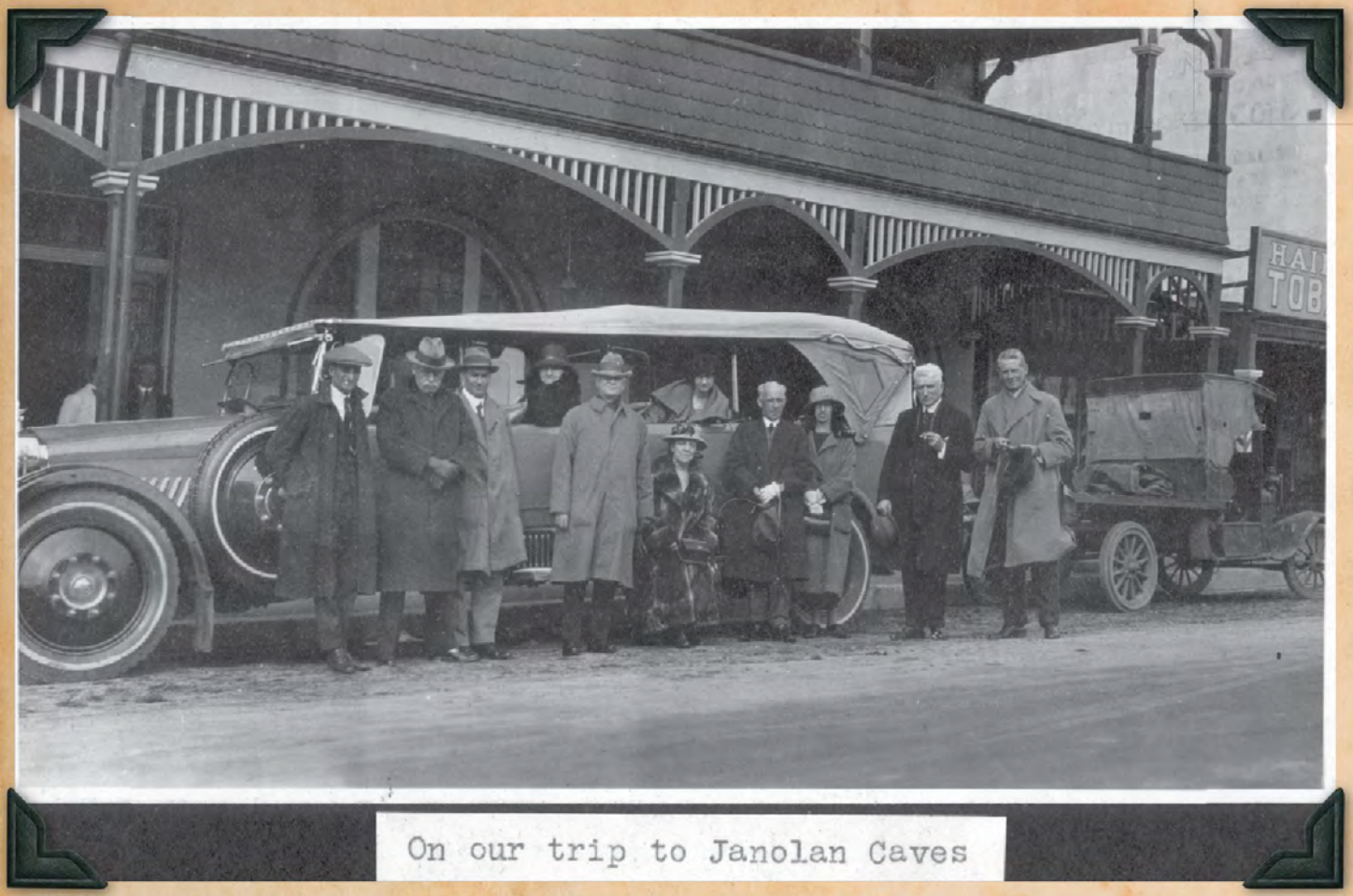
TWIN CITIES
Wednesday, May 23
The Lexington
1096 Grand Ave.

ROCHESTER
Thursday, June 7
DoubleTree by Hilton Hotel
150 S Broadway

DULUTH
Tuesday, Oct. 16
Hoops Brewing Company in Duluth
325 S Lake Ave.

VISIT WWW.MNMED.ORG/SOCIALS for more details.

Minnesota Medical Association



William J. Mayo and his wife liked to travel. Here, with friends, they are on a trip to Jenolan Caves in Blue Mountains, Australia.

Preventing burnout in medicine

Learning from the leisure lifestyle of the Mayo brothers

BY RODNEY B. DIESER, PHD, AND RENEE ZIEMER, BA

The Optimal Leisure Lifestyles (OLL) of the Mayo brothers—Charles H. Mayo and William J. Mayo— helped prevent them from experiencing burnout, augmented their lifelong learning and career satisfaction—and may serve as a model to physicians today.

Burnout is a significant concern among physicians, with national studies suggesting that approximately half of U.S. physicians experience it. Burnout is a three-fold psychological syndrome of emotional exhaustion, depersonalization and reduced motivation/sense of achievement in personal accomplishments, which usually occurs among human service professionals. In health care, burnout among professionals is associated with an increase in medical error (and malpractice suits) and health care costs (e.g., job turnover rates), and with a decrease in patient satisfaction (degree of physician depersonalization is correlated to patient satisfaction).

Psychologist Donald Super's theory of career enhancement and satisfaction is considered one of the big five theories in career development and is outlined in most textbooks related to career counseling or development. Super's theory rests on the axiom that career satisfaction increases—and burnout decreases—when there is balance among nine life roles:

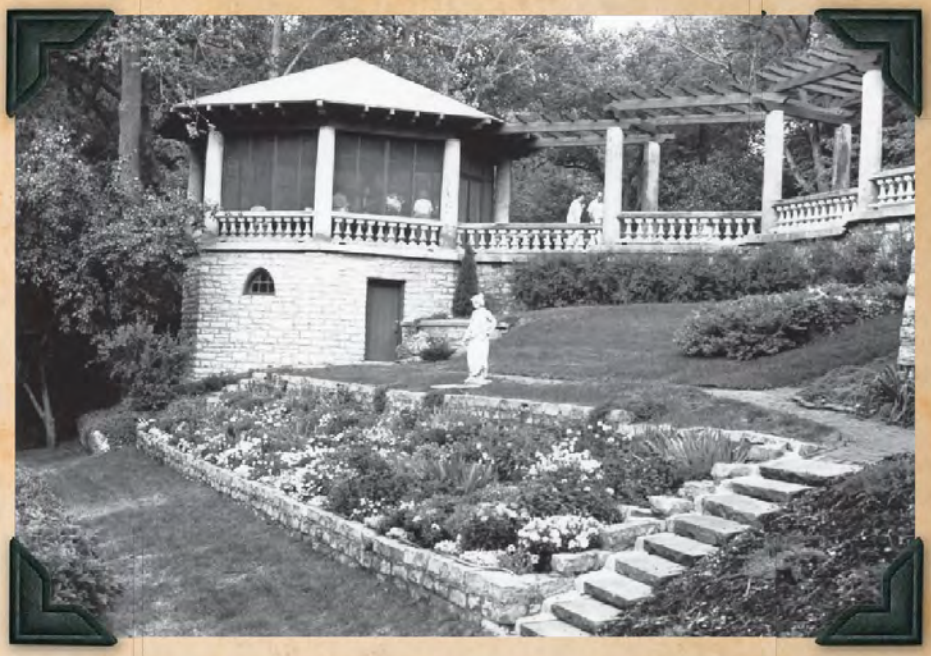
son or daughter, student, citizen, worker, spouse/partner, homemaker, parent, pensioner and "leisurite" (across the life span there are differing career and life demands). Self-concept, according to Super, pertains to how an employee views balance and self-construal (how a person defines himself or herself) in various life spaces/roles. For example: although a mid-career employee might be outstanding in the workforce, he or she may have low self-concept because of a perception of failure as a parent, thus increasing the probability of burnout.

To Super, "leisurite" referred to leisure involvement across a person's lifespan. Although there have been 13 theories of leisure identified in the academic literature, the Serious Leisure Perspective (SLP) is supported by hundreds of research articles. SLP has three forms:

Serious leisure is the systematic pursuit of an amateur, hobbyist or volunteer activity that participants find so substantial, interesting and fulfilling that they launch themselves on a leisure career centered on acquiring and expressing special skills, knowledge and experience. The central element of this definition is the development of special skills, knowledge and experience, which can take months or years to develop (e.g., playing a musical instrument in a community orchestra, collecting rare coins, level-six whitewater rafting on the most difficult rivers, becoming a member of the National Quilters Circle). Serious leisure has a close and often blurred relationship with occupational devotion, which is a strong and positive attachment to a form of self-enhancing work with core work tasks that are also (like serious leisure) substantial, interesting, and fulfilling. That is, both serious leisure and occupational devotion, which overlap, use specialized skills that the person finds deeply enjoyable and rewarding. For example, it is well-known that Charles Mayo combined travel and medical study and had a framed motto that hung in his office (1928-1938) that stated "There's No Fun Like Work."

Casual leisure is immediate, intrinsically rewarding, relatively short-lived activity that requires little or no specialized training, with a central property of hedonism and pleasure (e.g., relaxation, active or passive entertainment, social conversation).

The Mayo brothers frequently relaxed at their cottage near Oronoco, Minn.

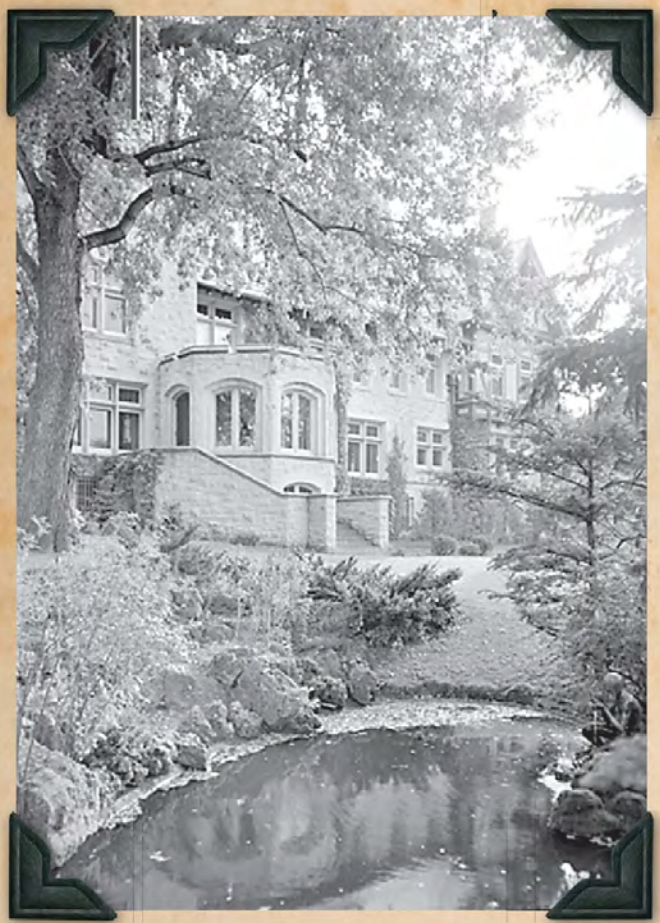


Charles H. Mayo liked to garden and created a tea house at his home.

Project-based leisure is a short-term, reasonably complicated, one-shot or occasional (though infrequent) creative undertaking carried out in free time (e.g., a two-week family vacation or camping trip, traveling overseas, designing a large family reunion). Project-based

> **"Anything which gives us pleasure and does no harm physically is a good thing."**
> --WILLIAM J. MAYO (1861-1939)

The riverboat North Star provided an enjoyable way for William J. Mayo and his brother to relax, away from their work.



Spending time in the garden was an important way to relax for William J. Mayo, here at his home.

leisure lies between serious and casual leisure in that it requires considerable planning, effort and, sometimes, specialized skills like serious leisure, but it is not intended to develop into serious leisure.

An Optimal Leisure Lifestyle (OLL) is the deeply rewarding pursuit during free time of at least one serious leisure activity, supplemented by casual and project-based leisure activities.

> **"Too many men work until they drop, [sic] and never get to enjoy life. Everyman [sic] should have an avocation. [Workers] ... should take more time for recreation—walking, horse-back riding, golf. One-third to one-half of your waking time should be devoted to such recreation."**
>
> --CHARLES H. MAYO (1865-1939)

The Mayo brothers' Optimal Leisure Lifestyle

Recent historical research posits that Charles H. Mayo and William J. Mayo embraced an OLL across their lives, which became part of the fabric of the developing Mayo Clinic in order to create a place of refuge for patients.

Many books and articles written about Charles and William Mayo, including histories of the early growth of the Mayo Clinic, descriptions of how the Mayo Clinic helped usher the rise of medical specialization within an integrated approach, and the autobiography by Charles W. Mayo (son of Charlie H. Mayo and nephew of William J. Mayo), recognize that, throughout their career, these two brothers had a drive to continue to learn and advance and never seemed to experience burnout.

The list of leisure activities the brothers engaged in is long, including:

- Spending time in parks and gardens.
- Wildlife and bird watching—and conservation projects.
- Ballroom dancing.
- Listening to music.
- Viewing artwork.
- Playing billiards.
- Yachting and boating.
- Driving.
- Getting away to a cabin.
- Travel, domestic and international.

The two also took part in civic projects for leisure services, including the Advisory Committee for National Rivers and Harbors, the creation of multiple community parks in Rochester and the creation of the Mayo Civic Auditorium and Mayo Civic Center.

A robust body of knowledge in the fields of leisure services, mental health counseling and career development shows that leisure provides psychological breathers from stress and an avenue to enjoyment. A few international studies suggest that leisure en-

gagement among physicians is correlated with lower levels of burnout, emotional exhaustion and job stress. It's likely that the OLL of the Mayo doctors buffered work and life stress and prevented burnout. Explicitly outlining the importance of developing an OLL as part of a physician/medical staff well-being program echoes the Mayo brothers' words and actions toward finding enjoyment in both career and life, while avoiding burnout. **MM**

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Leisure wisdom of the Mayo brothers

"We must develop earlier in life an avocation, to maintain our interest in life. Such outside lines of thought and diversion are the more successful when they bring us in contact with nature-birds, gardens, geology, and the like."
--Charles Mayo, 1927

"To live a full life is to enjoy the companionship of intellectual persons and with them to enjoy the interesting things of life, not the material things only, but those spiritual inspirations which motivate life."
--William Mayo, 1931

"It is said that there are songs in the soul of every man. Some have many, some have few, but, consciously or unconsciously, there is a deep-seated desire in all of us to express something which can be expressed only in music."
--Charles Mayo, 1933

"We must devote some time to obtaining greater knowledge of the world, without devoting too much time to any one of its many problems. In obtaining this broad knowledge, a stimulus for an avocation will be produced in many people. We take life so seriously that there is nothing to fill our leisure hours during our working years, and when retirement comes we have nothing to enjoy. Life is not altogether what we know but what we are able to use of what we know and what we are able to use of what we know to help others."
--Charles Mayo, 1935

Adverse Childhood Experiences impact thousands

Trauma-informed health care practices can change the focus—and outcomes

BY HELEN KIM, MD, AND SYL JONES, BA

A deadly virus is ravaging Minnesota's children. For years, we've watched this infection impact children's brain development, alter their immune and hormone systems and even change genetic structure and function. Even worse, adults with childhood exposure to this virus die 20 years earlier and have higher rates of heart disease, chronic lung disease, cancer, mental illness and substance abuse.

What steps have we taken to respond to this multi-generation "virus" in Minnesota? Sadly, we've done very little because we've failed to recognize the viral-like nature of Adverse Childhood Experiences or ACEs. Although the ACE study is legendary, many Minnesota health care providers have not heard of it or don't understand how it applies to their clinical practice.

The original ACE study surveyed 17,000 predominantly white, insured, college-educated adults about childhood trauma, including exposure to: physical, emotional and sexual abuse; physical or emotional neglect; and household stress such as domestic abuse, parental incarceration or living with a parent with mental illness or substance abuse. The study found that childhood trauma is stunningly common. For instance, among this privately insured and relatively privileged group, 21 percent experienced childhood sexual abuse, 28 percent experienced physical abuse and 19 percent lived with a parent with mental illness. ACEs also clustered; 40 percent of respondents had two or more ACEs and 13 percent had four or more.

This study and dozens of others also found that ACEs have lifelong health effects. More specifically, the higher one's ACE score, the higher the rate in adulthood of conditions like depression, anxiety, substance use, heart disease, diabetes, autoimmune disease and cancer. Other studies have extended ACEs beyond the original survey to include childhood exposure to racism, bullying, unsafe neighborhoods and poverty. These studies clearly affirm that exposure to persistent toxic stress in childhood and beyond is associated with negative health outcomes that disproportionately affect minority groups.

We may like to believe that somehow it's different in Minnesota, but the 2011 Minnesota ACE study confirmed that 60 percent of those surveyed had two or more ACEs and 24 percent had four or more. Not surprisingly, the Minnesota ACE study also revealed glaring racial disparities: five or more ACEs were reported in 19 percent of African Americans and 23 percent of Native Americans, compared with 7 percent of whites, 12 percent of Hispanics and 4 percent of Asians. And, like the original ACE study, the Minnesota study showed a clear dose-response relationship: the higher the ACE score, the higher the rate of mental illness, alcohol abuse, smoking and poor health status in children and adults.

The public health implications are staggering for all of us and devastating for those coping with the sequelae of childhood abuse and adversity. These individuals and their families generally have not been given the knowledge or professional support they need to heal from their trauma. Instead, many are led to believe that their inability to stop smoking, use drugs or even to control their diabetes is a result of bad decisions derived from imagined character weaknesses. Some are told that their chronic conditions are simply the luck of the genetic draw.

Imagine what might happen if Minnesota medical professionals explained how exposure to ACEs in childhood often leads to poor health in adulthood. For example, research shows that exposure to early psychological and emotional trauma creates "toxic stress," which the Harvard Center for the Developing Child defines as "prolonged activation of the stress response system in the absence of protective relationships." When children are left unsupported and repeatedly exposed to threats to their safety, toxic stress triggers the body's stress response system, setting off physiologic reactions that alter children's developing brains and bodies.

These biological changes have been linked to social, emotional and behavioral problems in childhood and increased risk-taking in adolescence (e.g. early initiation of sex, smoking and substance abuse). Though even if one does not engage in such risky behaviors, higher ACE scores are associated with poorer health, possibly due to epigenetics, a process in which experiences impact gene expression in current and later generations.

Around the country, schools, courts, police departments, cities like Philadelphia

and states like Wisconsin are working toward becoming "trauma-informed."

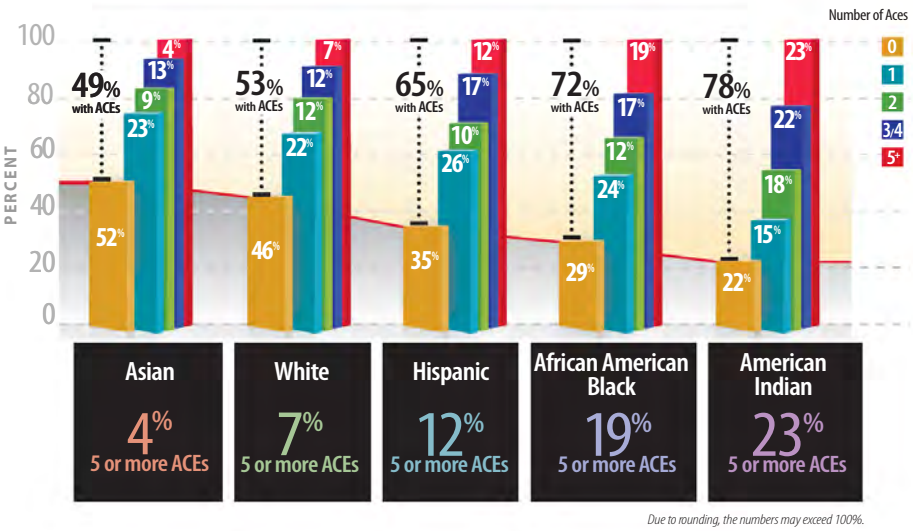
Healthcare systems in Minnesota could do the same. An important first step would be creating hospitals and clinics that are sanctuaries of safety and infusing trauma-informed practices into our everyday work. Trauma-informed healthcare approaches recognize that adults may have high ACEs that have contributed to their health problems. Providers can help patients connect the dots between current health and "what *happened* to you" versus only focusing on "what's *wrong* with you" to create a health narrative that fosters self-compassion, an essential part of motivating someone to take better care of themselves.

Likewise, trauma-informed practices would extend to staff well-being within healthcare systems by promoting self-care and resilience-enhancing practices to improve employee health and engagement and address burnout. Given the relatively high rates of ACEs among both patients and staff, trauma-informed healthcare approaches would foster an environment that feels emotionally safe for all.

Trauma-informed care could also help reframe how we talk about and address Minnesota's enduring health disparities. Trauma-informed healthcare approaches acknowledge the accumulating evidence that exposure to racism (rather than race itself) is a leading driver of toxic stress and poor long-term health. Systemic racism and poverty are examples of adverse environmental experiences that not only drive toxic stress in children, but also undermine the emotional bandwidth of parents, families, and communities supporting those children. With the well-established link between childhood adversity, historical trauma, structural racism and the leading causes of adult disease and dis-

ACEs BY RACE/ETHNICITY

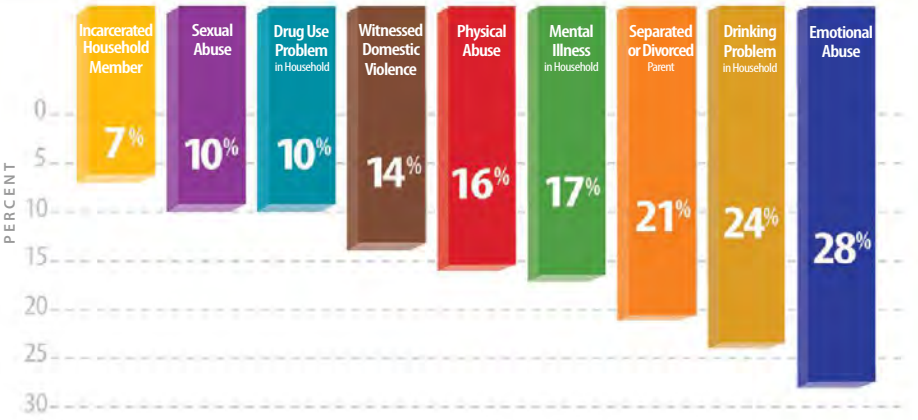
MINNESOTA 2011



Due to rounding, the numbers may exceed 100%.

PREVALENCE OF INDIVIDUAL ACEs

MINNESOTA 2011

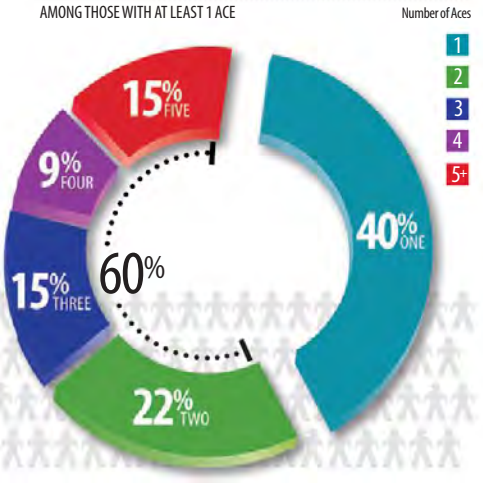


GRAPHICS BY TRIAD MARKETING & ADVERTISING, INC. FOR MINNESOTA DEPARTMENT OF HEALTH

DISTRIBUTION OF ACEs

MINNESOTA 2011

AMONG THOSE WITH AT LEAST 1 ACE



55% of Minnesotans report **experiencing one or more ACE** in childhood

ability, healthcare leaders and providers can actively work to dismantle policies and practices that undermine rather than support health and healing.

Trauma-informed healthcare systems can also adopt two-generation approaches that help adults heal from their own early adversity, while also supporting their role as adult protectors of children. So, when adult patients with high ACEs seek treatment for diabetes, healthcare providers can describe the connection between early adversity, toxic stress and adult chronic disease. In addition, if adult patients are parents, a two-generation (parent-child) trauma-informed approach could include encouraging them to take an active role in preventing ACEs and toxic stress in their children. Interventions to engage parents and caring adults as protectors of children can reduce transmission of ACEs and prevent subsequent health and social problems.

Preventing childhood adversity and toxic stress is both an opportunity and a public health crisis that is becoming more urgent by the day. Early adversity drains Minnesota of precious human and economic capital and contributes to our unconscionable racial disparities. No community is immune from this "virus" that is hurting our children, including Minnesota. We desperately need an integrated, community-wide commitment to trauma-informed care led by our much-vaunted healthcare systems, all of which have missions to improve the healthcare of our communities.

Minnesota, what are we waiting for? Our children and many of their parents are suffering. We have no time to waste. **MM**

Helen Kim, MD, is the medical director and co-founder of the Mother-Baby Program and the Redleaf Center for Family Healing, Hennepin Healthcare. Syl Jones, BA, is narrative health and medicine director for Hennepin Healthcare and creative lead at the Redleaf Center for Family Healing.

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Physicians and physicians-in-training took a moment for a group shot before heading off to their meetings with lawmakers.

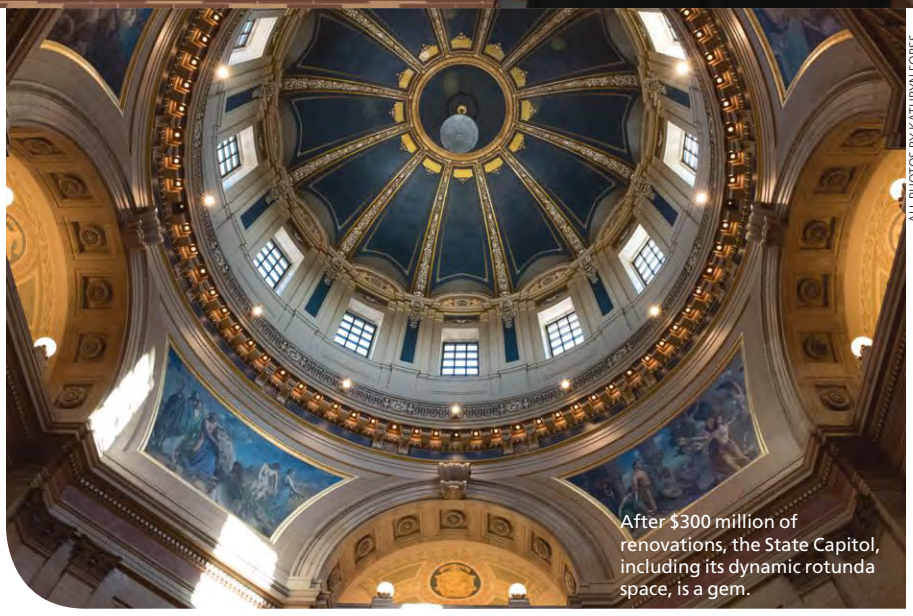
White coats take over Capitol

Advocacy for the practice of medicine is certainly alive and well at the Capitol, if the MMA's Day at the Capitol is any indication.

More than 120 physicians and physicians-in-training gathered for MMA's annual Day at the Capitol on March 14 to meet with legislators and discuss MMA's top legislative priorities: fighting the opioid epidemic and ensuring patients have access to needed medication.

Before meeting with legislators, attendees heard comments from new Health Commissioner Jan Malcolm and Sen. Julie Rosen (R-Vernon Center).

Following the Capitol event, the group convened for a reception at St. Paul's University Club, where they heard Rep. Roz Peterson (R-Lakeville), the author of several MMA-supported patient protection measures related to drug pricing, and Sen. Matt Klein, MD (DFL-Mendota Heights), who is also an MMA member and one of two physicians in the Senate.



After $300 million of renovations, the State Capitol, including its dynamic rotunda space, is a gem.

ALL PHOTOS BY KATHRYN FORSS

Resident Arun Mallapareddi, MD, was among the more than 120 physicians and physicians-in-training gathered for MMA's annual Day at the Capitol in mid-March.

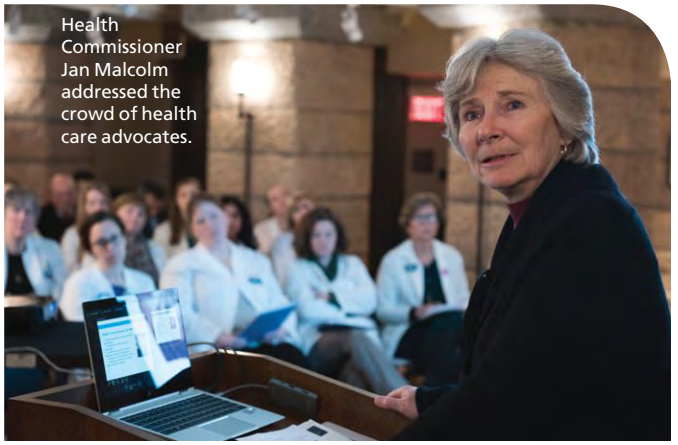
White coats take over Capitol:

(continued from previous page)

MMA Board member Marilyn Peitso, MD, and Kimberly Tjaden, MD, discuss health care with Sen. Michelle Fischbach (R-Paynesville).

MMA Board Chair Randy Rice, MD, and Dania Kamp, MD, have a hallway conversation with Sen. Tony Lourey (DFL-Kerrick.)

Sen. Julie Rosen (R-Vernon Center) discussed her support of legislation that will get needed medication to patients more quickly.



Health Commissioner Jan Malcolm addressed the crowd of health care advocates.

News Briefs

MMA releases statement on gun violence

Since the Valentine's Day shooting at a Parkland, Fla., school, the country has debated and discussed the issue of gun violence extensively. The MMA is no different; in early March, the association's executive committee approved a public statement on the topic, pulling together past policy approved by the MMA's board as well as an expansion consistent with AMA policy.

"The topic of gun violence has been deliberated by the MMA many times over the years," said MMA Board Chair Randy Rice. "We felt, as do many other organizations, that after the Parkland shooting it was time to formally call this for what it is—a public health crisis."

The statement generated significant press coverage and led to considerable feedback, both positive and negative, toward the association from members and non-members.

Here is the statement in its entirety:

MMA Statement on Gun Violence (March 2018)

Gun violence and firearm-related accidents kill more than 30,000 Americans each year. In Minnesota, there were more than 400 firearm-related deaths in 2016. The recent and relentless mass shootings, as well as the daily toll associated with gun violence and accidents, demand a response.

The Minnesota Medical Association (MMA) considers gun violence a public health crisis and calls on policymakers at the state and national levels to step up and protect our health and safety. The MMA supports common-sense changes to gun laws that will promote safe and responsible gun ownership, including criminal background checks on all purchases and transfers/exchanges of firearms; enforcement of laws that will hold sellers accountable when they sell firearms to prohibited purchasers; investment in improved data collection, analysis, and research on firearm injury prevention; and, a renewal and strengthening of the assault weapons ban, including banning high-capacity magazines.

The MMA also renews its call for improved access to and coverage of comprehensive mental health services. Most individuals with mental illness are not violent. It is important, however, to encourage and support the identification of individuals at risk for violence or self-harm. Physicians and other health care providers also have a re-

sponsibility to talk to patients about responsible firearm ownership and safe storage in the home.

Few threats to our health and safety can be eliminated, but failure to intervene in the face of this significant epidemic is not an option.

Minnesota's newest senator meets with MMA board

Newly appointed U.S. Sen. Tina Smith discussed several health care topics, including the opioid epidemic, with the MMA's Board of Trustees in early February.

She thanked the MMA for its work on opioids, prescribing guidelines and the Prescription Monitoring Program (PMP). This legislative session, the MMA has advocated for embedding the PMP into electronic health records.

Board members asked Smith several questions regarding the opioid epidemic, about finding funding to address the crisis and the chilling effect caused by visits by the U.S. Drug Enforcement Administration when practices use Medication-Assisted Treatment (MAT).

Smith told the physicians that she also would be working on the high cost of pharmaceuticals.

Congress bill supports fight on opioid epidemic

The appropriations bill passed by Congress in March had several bright spots for physicians, including nearly $4 billion in funding to address the opioid epidemic through prevention, treatment and law enforcement.

Examples of funding for opioids include:

- $500 million to the National Institutes of Health for research on opioid addiction, development of opioid alternatives, pain management and addiction treatment.
- $20 million to the U.S. Department of Agriculture for telemedicine and distance-learning services to help address the epidemic in rural areas.
- An increase of $105 million for the National Health Service Corps to expand and improve access to opioid and substance use disorder treatment in rural and underserved areas.
- $10 million for the Centers for Disease Control and Prevention (CDC) to conduct a nationwide opioid awareness and education campaign.

In addition to the opioid appropriations, the bill includes the Fix NICS Act, which is aimed at improving records and information-sharing in the FBI's National Instant Criminal Background Check System for gun purchases. The bill also calls for improving school safety and includes language allowing the CDC to study the causes of gun violence, but does not include specific funding for it.

The bill sets aside a $414 million increase for Alzheimer's research and more than $2.3 billion in new funding for mental health programs and other training.

To address the physician workforce, the bill calls for providing $15 million for the Rural Residency Program to increase rural residency slots and $315 million for the Children's Hospitals Graduate Medical Education.

Two LGBTQ health events scheduled for May

The MMA will host two events geared toward LGBTQ health in May: an online session May 9 from noon to 1 p.m. on Facebook Live (www.Facebook.com/mnmed), and an in-person forum May 15 from 5 to 8 p.m. at the University of Minnesota Campus Club in Minneapolis.

The events' goals are to:

- Raise awareness of the unique health needs of the LGBTQ community.
- Raise awareness of the health disparities faced by the LGBTQ community and the root causes of those disparities.
- Identify strategies for creating a welcoming, supportive and quality clinical environment for the LGBTQ community.

For more information and to register, visit www.mnmed.org/LGBTQForum.

AMA study confirms prior authorization is bad for patients

More than nine in 10 physicians say that prior authorization (PA) programs have a negative impact on patient clinical outcomes, according to a new physician survey released in mid-March by

(continued on next page)

On the calendar

Event	Date	Location
LGBTQ Health Forum (Online)	May 9	Facebook Live
St. Cloud Doctors' Lounge	May 10	St. Cloud
LGBTQ Health Forum (In-person)	May 15	Minneapolis
Twin Cities Doctors' Lounge	May 23	St. Paul
Rochester Doctors' Lounge	June 7	Rochester
Duluth Doctors' Lounge	Oct. 16	Duluth
Annual Conference	Sept. 21-22	St. Paul

the AMA. Reforming PA in Minnesota has been a long-term legislative priority for the MMA.

According to the AMA survey, which examined the experiences of 1,000 patient care physicians, nearly two-thirds (64 percent) report waiting at least one business day for PA decisions from insurers—and nearly a third (30 percent) said they wait three business days or longer.

More than nine in 10 physicians (92 percent) said the PA process delays patient access to necessary care; nearly four in five physicians (78 percent) report that PA can sometimes, often or always lead to patients abandoning a recommended course of treatment.

In addition, a significant majority of physicians (84 percent) said the burdens associated with PA were high or extremely high, and a vast majority of physicians (86 percent) believe burdens associated with PA have increased during the past five years.

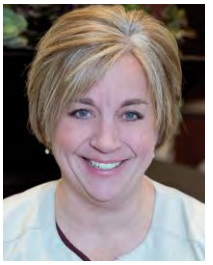
"This data just further reinforces the need to reform prior authorization in Minnesota and across the country," said MMA President George Schoephoerster, MD. "Legislators need to pass legislation that puts patients first."

In 2015, the MMA, along with dozens of other physician and patient advocacy organizations formed the Fix PA Now coalition.

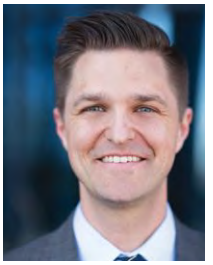
This legislative session, the MMA has supported legislation to ensure patients have access to needed medication in a timely manner. This includes continuing efforts to pass medication PA reforms, supporting legislation that limits the use of step therapy, limiting the number of formulary changes during a patient's contract year and opposing limits on practitioners' and pharmacists' ability to ensure patients get the most cost-effective therapies available.

The AMA survey findings show that every week, a medical practice completes an average of 29.1 PA requirements per physician, which takes an average of 14.6 hours to process. To keep up with the administrative burden, about a third of physicians (34 percent) rely on staff members who work exclusively on the data entry and other manual tasks associated with prior authorization.


Dave Renner


Janet Silversmith


Elizabeth Anderson


Niels Knutson


Juliana Milhofer

MMA in Action

MMA Board Chair **Randy Rice**, MD; MMA Policy Council Chair **Lisa Mattson**, MD; and **Dave Renner**, MMA's director of state and federal legislation, attended the AMA National Advocacy Conference in Washington, D.C., in mid-February. The conference is designed to provide the tools needed to become better advocates for physicians and the patients they serve. During their stay, Rice, Mattson and Renner met with staff from Sen. Amy Klobuchar's and Sen. Tina Smith's offices, as well as staff from the offices of Rep. Tom Emmer, Rep. Rick Nolan, Rep. Betty McCollum and Rep. Eric Paulsen.

In April, Rice and MMA CEO **Janet Silversmith** attended the American Society of Association Executives' Symposium for Chief Staff and Chief Elected Officers in Chicago.

Lyndsey Aspaas, MMA manager of education and events, served as faculty at the ACCME Meeting in April for the sessions: Using EdTech for Performance Improvement: Getting Started with an LMS and Accreditor Summit: Best Practices for Accreditation.

Elizabeth Anderson, MMA director of membership, and **Niels Knutson**, manager of member outreach, attended the MMGMA Winter Conference in March.

In mid-March, Anderson; Knutson; **Juliana Milhofer**, MMA policy analyst; and **Nancy Bauer**, interim executive director for the Twin Cities Medical Society, attended Match Day at the University of Minnesota Medical School. Knutson and Anderson attended the Minnesota Hospice and Palliative Care Conference in April. Knutson, Anderson and **Scott Wilson**, MMA sponsorship and membership manager, attended the Minnesota Academy of Family Physicians Spring Refresher in April.

Renner and **Eric Dick**, MMA manager of state legislative affairs, provided a legislative update at the MAFP Spring Refresher.

Anderson and **Lindsey Schneider**, events and education associate, helped organize and attended the 2018 St. Cloud Dementia Summit in March.

In mid-March, Silversmith and Milhofer met with leaders from Doctors for Health Equity to talk about common interests and MinnnesotaCare financing.

Silversmith also met with Ashok Patel, MD, and Beth Kangas, executive director of the Zumbro Valley Medical Society, to discuss how the MMA and ZVMS can work together.

In late March, Silversmith, Anderson and Bauer met with MEDNAX Inc., a company that focuses on neonatal, anesthesia, maternal-fetal and pediatric physician subspecialty services.

VIEWPOINT

Session shaping up to be better than expected

Randy Rice, MD
MMA Board Chair

By the time you read this, we will be in the home stretch for the 2018 legislative session. When the session began in February, it was unclear what the Legislature would be able to do. Consequently, we were conservative in our hopes for success.

Lawmakers came to the session navigating a divide that had grown between the governor and legislators. They were also dealing with the fallout from widespread and growing sexual harassment allegations against several legislators. Plus, all 134 House legislators are up for re-election, and there is a very competitive gubernatorial race underway.

Despite these obstacles, the session is turning out to be surprisingly positive. We had a great turnout at our annual Day at the Capitol event and by the Easter/Passover break, our lobbyists were feeling optimistic about the MMA's top two priorities.

Our first priority is supporting patients' access to affordable prescription drugs. In this realm, our efforts are progressing. We are having success encouraging legislators that health plans and pharmacy benefit managers (PBMs) must be prohibited from placing restrictions in their contracts on a pharmacist's ability to tell patients that paying cash for a prescription may be cheaper than using their insurance benefit and ensuring that patients have access to drugs at their lowest possible cost. Also, legislation to address one piece of our prior authorization bill—designed to limit the use of step therapy to one time for an existing therapy and to ease the ways in which a physician can seek an override of a health plan's step therapy requirement—is moving in both bodies.

Our second priority is reducing the harm of opioids and addressing our overdose crisis. It seems very likely that new dollars will be devoted to fighting the opioid epidemic. We're just not sure of the funding source. Legislators have been very supportive of the MMA's call for embedding access to the state's prescription monitoring program (PMP) into electronic health records. They've also been supportive of devoting resources to help educate prescribers and patients, as well as funding new addiction treatment.

In addition to our two priorities, the MMA has devoted resources to several other issues at the Legislature. MMA lobbyists have advocated for legislation that would allow Minnesota to participate in the Interstate Medical Licensure Compact, which eases the process of licensure in multiple states. We have also opposed the push to enact work requirements on Medical Assistance and MinnesotaCare enrollees, as well as legislation to expand physical therapists' scope of practice.

Of course, our progress could get derailed between now and May 21, the Constitutionally mandated completion date. While dozens of bills have moved through the committee process, very few have made it to Gov. Dayton's desk for consideration so far.

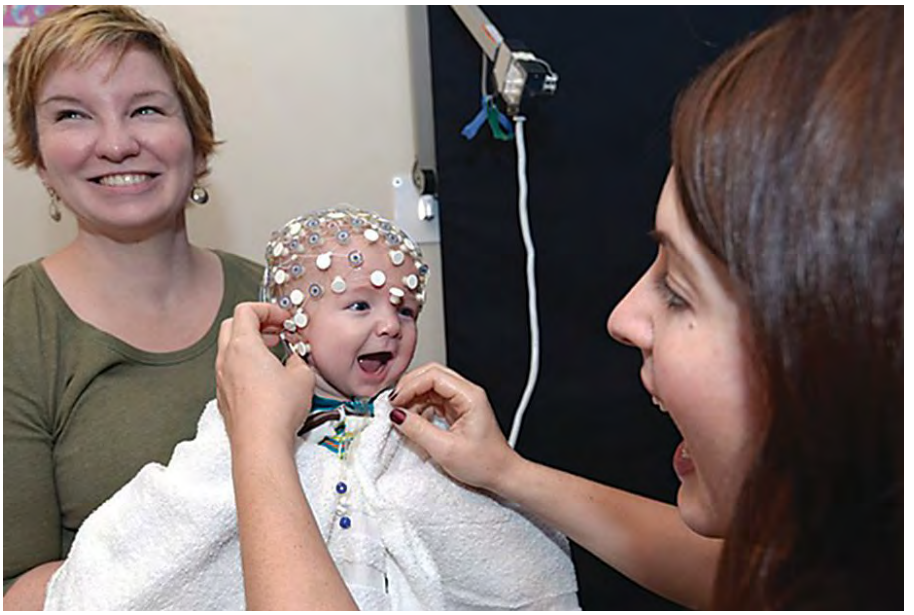
At the very least, Minnesota physicians can be assured that they are well-represented at the Capitol and legislators still want to hear what we have to say when it comes to determining how medicine is practiced in our state.

Despite obstacles, the session is turning out to be surprisingly positive.

Maternal manganese exposure and subsequent infant cognition

BY NEELY C. MILLER, BS; PATRICIA M. MCGOVERN, PHD, MPH; IRINA STEPANOV, PHD; SHANNON M. SULLIVAN, MPH, MS; STEVEN J. MONGIN, MS; RAGHAVENDRA RAO, MD; AND MICHAEL GEORGIEFF, MD

Neurodevelopmental disabilities such as learning, attention, and behavioral problems exact a significant toll on children. Smaller, subclinical decrements in brain function are more common and may diminish children's academic success and contribute to behavior problems. These conditions are associated with a growing list of potential neurotoxicants, including manganese. Manganese is found in groundwater across Minnesota and 20% of the population obtains drinking water from unregulated private wells. Our study examined neurodevelopmental effects of fetal/neonatal exposure to manganese, a potential neurotoxicant at excessive levels. We recruited 28 mother-infant pairs from two Minnesota cities with high levels of groundwater manganese, one of which filtered out manganese from its public water supply; the other did not. Infant neurocognitive function was assessed at 10 months of age in 22 infants by measuring changes in electrophysiologic response to a task dependent on intact frontal lobe function. Infants of mothers with increased concentrations of manganese in their hair and toenails showed smaller amplitudes in the electrophysiological response to distinct-far stimuli. Higher concentrations of manganese in tap water were also significantly and inversely associated with amplitude to distinct-far and distinct-close stimuli. Higher levels of manganese in maternal toenails were significantly and positively associated with latency difference score for the far-distinct condition in their offspring, indicating slower latencies. Study findings provided evidence for perturbations in neurodevelopment in manganese-exposed infants. The association with maternal, not infant, biomarkers indicates these effects may be driven by fetal manganese exposure. Potential prevention measures include identifying women of reproductive years who get water from wells untreated for manganese, in order to educate them about manganese, and to encourage testing and treating wells for water quality.



Estimates of neurodevelopmental disabilities in the United States (U.S.) are that 4.9 million (8%) children are learning disabled and another 5.9 million (9.5%) have attention deficit disorder.[1] From the period 1998–2000 to 2007–2009, the prevalence of ADHD among children aged 5–17 years grew from 6.9% to 9.0%.[2] Smaller, subclinical decrements in brain function are more common than diagnosed disorders and such conditions may decrease children's academic success, disturb behavior, and diminish quality of life.[3] These conditions are associated with a growing list of potential neurotoxicants, including manganese.

Manganese is an essential micronutrient, low levels of which are required in a healthy diet. However, excessive exposure to manganese has adverse effects on brain function. Manganese overexposure in animal models is associated with cognitive and motor deficits and impaired dopamine release,[4] and induces chemical and structural changes in the frontal and parietal cortices.[5] Ingested manganese accumulates in tissue and bone; thus, cumulative exposure increases the risk of neurological issues.[6] In non-human primates, cumulative manganese exposure is associated with neuronal loss or dysfunction and white matter degeneration in the frontal cortex.[5]

An emerging body of literature suggests that childhood exposure to even low levels of environmental manganese may have adverse neurodevelopment effects and could contribute to neurobehavioral disorders.[7] Subtle decreases in memory, attention, and motor skills have been positively associated with manganese concentrations in drinking water. Most studies have analyzed the adverse effects of excessive manganese in school-age children, but in-utero and early childhood exposures are of greater concern because this is a critical time in brain development. While manganese levels are closely regulated by homeostatic mechanisms in adults, these mechanisms may be inefficient in newborns and infants resulting in increased absorption efficiency and reduced biliary excretion.[8,9] Infants are also at increased risk for toxicity because they consume a greater amount of fluids per body weight.[10] Drinking water, infant formula, and some baby foods may contain manganese. Combined with maternal exposures during pregnancy, a risk of cumulative exposure exists for the fetus and neonate, yet few studies have addressed infant outcomes.[7]

To address this concern, the Minnesota Department of Health (MDH) published a two-tiered, Risk Assessment Advice (RAA_{12}). Tier 1 recommends limiting exposure to manganese in water to 100 µg/L for infants less than 1 who drink untreated tap water or formula prepared with tap water. Tier II recommends limiting exposure to manganese in water to 300 µg/L for infants who never drink tap water or formula made with tap water, children 1 and older, and adults.[11] This guidance is important for Minnesotans, since manganese occurs naturally in groundwater across the state and concentrations vary from below reporting limits to more than 5,000 µg/L with a median of 101 µg/L.12 (Figure 1) While most metropolitan public drinking water supplies are treated (e.g., filtered), some ex-urban and rural communities lack treatment for manganese. Approximately 1.35 million Minnesotans obtain drinking water from private wells that are not regulated for water quality. Individual well owners are responsible for testing and treating their water for contaminants, but it is unclear how many well owners test and treat their water for manganese. Additionally, 3% of Minnesotans who are on community public water systems receive drinking water with levels above 300 µg/L and 7% receive water with levels between 100-300 µg/L, although some households may treat drinking water at the tap.[12]

Our study examined the neurodevelopmental effects of fetal/neonatal exposure to manganese by enrolling mother-infant pairs from two U.S. cities that have naturally occurring, high levels of manganese in their ground water. Infant neurocognitive function was assessed using a test to assess infant frontal lobe integrity. We used an auditory oddball event-related potential (ERP) paradigm designed to elicit the P3a component. The P3a is elicited when improbable, distinct stimulus occurs against a background of a repeating stimulus. It represents the shift in attention to the distinct stimulus, and is dependent on frontal lobe integrity.[13] Attenuated P3a amplitudes have been found in populations with dopaminergic dysfunction[13] and frontal lobe lesions.[14] Based on previous studies of the P3a component and the established neurological implications of manganese exposure, we expected to find decreased amplitude and increased latency in the electrophysiological response to distinct stimuli in manganese-exposed infants.

Methods

Volunteer pregnant and postnatal women were recruited from two cities, both with high manganese concentrations in the drinking water and similar population demographics. One city filtered its water supply for manganese and had negligible levels in its water; the other city did not filter for manganese. Infants born full-term to pregnancies without risk factors to fetal neurologic health were enrolled in the study; in addition, mothers and infants must have resided in selected cities throughout the entire pregnancy and the infant's first 10 months of life. When an infants was 7 months old, we collected water samples from the family residence, as well as hair and toenail samples from mothers and infants. Of 28 infant-mother pairs who were originally surveyed, 22 were able to provide data for these analyses. Manganese levels in biomarkers were analyzed by inductively coupled plasma mass-spectrometry; the methodology and analysis of these biomarker data were reported in a separate publication.[15]

ERP data was collected when infants were 10 months old. Infants were fitted with a 64-channel Geodesic Sensor Net (EGI, Inc.) and presented with three tones (75 decibels sound pressure at the infant's head); the standard tone (440 Hertz) was presented for 75% of trials, while distinct-close (250 Hertz) and distinct-far (1000 Hertz) tones were equally presented for the remaining 25% of trials. (Figure 2) All infants heard a minimum of 250 tones (range 250-290). ERP data collection and processing parameters were consistent with previous literature.[16] The P3a is maximal over front-central leads[13] and occurs 250-500ms after stimulus presentation. For this analysis, one frontal midline lead, FCz, was chosen, and a P3a difference score was computed for the amplitude and

latency of each distinct condition by subtracting the value for the standard condition from the distinct conditions.

Paired data on ERP difference scores linked to corresponding biomarkers and tap water manganese were plotted, and Spearman's rank correlation (Rho) was used to quantify their association with minimal assumptions about their underlying distributions.[17] Levels of manganese measured in tap water that fell below the 10ug/L reporting limit were imputed as 9 micrograms/Liter (ug/L). All tests were run with a two-sided alternative hypothesis, and all statistics were computed in R.[18]

Results

Differences in infants' response to distinct stimuli were associated with exposure to higher concentrations of maternal manganese. Infants of mothers with increased concentrations of hair-manganese (n=20 [71%], Rho = –0.47, p=0.040, 95%CI: -0.753,-0.30), and toenail-manganese (n=22 [79%], Rho = –0.42; p=0.052, 95%CI: -0.716, 0.000) showed smaller amplitudes in the electrophysiological response to distinct-far stimuli (Figure 3). Higher concentrations of tap water manganese were also significantly and inversely associated with amplitude to distinct-far (n=15 [54%], Rho = –0.61; p=0.015, 95%CI: -0.857, -0.148) and distinct-close (n=15 [54%], Rho = – 0.54; p= 0.038, 95%CI:-0.824, -0.039) stimuli. Infants' biomarkers of hair and toenails were not significantly associated with P3a amplitude. Analysis revealed the higher levels of manganese in maternal toenails were significantly and positively associated with latency difference score for the far-distinct condition in their offspring (n=22 [79%], Rho = 0.50; p=0.018, 95%CI: 0.100, 0.761), indicating slower latencies. Latency difference scores were not significantly associated with water or other biomarkers.

Discussion

The study's aim was to determine whether manganese exposure during the fetal and infancy periods was associated with changes in electrophysiologic response to auditory stimuli in a task dependent on intact frontal lobe function. Our results suggest that infants with increased gestational exposure to manganese may have frontal lobe impairments as indexed by decreased amplitude and increased latency of the P3a component to distinct stimuli. The processing deficits observed in manganese-exposed infants were primarily limited to the distinct-far stimulus, while processing of the distinct-close stimulus largely remained intact. Imaging evidence suggests a two-level approach to processing auditory deviance: small stimulus changes are processed by the superior temporal gyrus and inferior frontal gyrus; whereas large stimulus change processing requires the addition of the dorsolateral prefrontal cortex.[19] The associations between manganese exposure and reduced amplitude and increased latency of the distinct-far condition may be indicative of dysfunction in the prefrontal cortices of manganese-exposed infants, while processing dependent on ventrolateral regions remains intact.

The finding that maternal postnatal manganese levels were related to infant ERP response while infant biomarkers were not may indicate fetal exposure is driving these effects. Whole blood levels of manganese increase throughout pregnancy, and the fetus concentrates manganese, higher levels of which persist in the neonatal period.[20] While maternal and infant biomarkers may not reflect placental manganese concentrations,[21] the chronic maternal exposure implied by maternal nail and hair levels may have induced changes in the development of the fetal brain structure or circuitry.

Study limitations

There are several limitations to this study:

- The sample size was small, precluding use of multivariate analyses to statistically adjust for confounders to the association of manganese exposure and infant neurocognitive function.
- Enrollment of study participants was voluntary, not random, creating the potential for selection bias.
- Participants were from two cities in the metropolitan Twin Cities, limiting the generalizability of study findings to other populations.
- Data collection did not include evaluation of manganese in infants' diet other than water and most infants began consuming baby food by the time they were 6 months old.

Implications for research and practice

This study explored the relationship between manganese exposure and infant neurodevelopmental outcomes and provides evidence for perturbations in neurodevelopment in manganese-exposed infants. Studies with larger samples from various geographic locations are needed to facilitate more comprehensive study designs and robust analyses to learn if study findings generalize to other populations of pregnant women and fetuses. Longer follow-up periods would be necessary to understand whether the changes we observed in infant neurocognitive function are temporary or permanent, since similar perturbations in fetal and infantile iron deficient populations do carry forward into adulthood.[22]

The Minnesota Department of Health's two-tier Risk Assessment Advice (RAA_{12}) for exposure to manganese in water provides important precautionary guidance for households including women of reproductive age and infants that obtain their drinking water from private wells or

public wells that lack treatment to reduce manganese levels. There is a critical need for physicians and public health practitioners to identify if women of reproductive years use well water and, if so, whether their drinking water is routinely tested for manganese and other contaminants by a certified laboratory. Providing these women with access to information on manganese in water, available on the Minnesota Department of Health's website, may be warranted; the website provides important information such as how to test well water quality and best protect their families. (http://www.health.state.mn.us/divs/eh/water/contaminants/manganese.html#Protect).

Conclusion

This study explored the relationship between manganese exposure during the fetal and infant periods and infant electrophysiologic response in a task dependent on intact frontal lobe function, and provided evidence for perturbations in neurodevelopment in manganese-exposed infants. The association with maternal, rather than infant, biomarkers may indicate that these effects are driven by fetal manganese exposure. Given that subclinical decrements in children's brain function are more common than diagnosed disorders and such conditions may decrease children's academic success, disturb behavior, and diminish quality of life, families could benefit from learning about risk-mitigation strategies from medical and public health practitioners. Proactive measures, such as identifying women of reproductive years with wells untreated for manganese, to educate and encourage testing and treating wells for water quality in association with manganese and other contaminants is advised. **MM**

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Early recognition, management and outcome of a large subgaleal hemorrhage in a neonate at birth

BY VINAYAK NADAR, MD, AND ASHAJYOTHI M SIDDAPPA, MD

A 30-year-old mother was admitted in active labor at 37 weeks of gestation. Her pregnancy was uncomplicated; she had her first prenatal visit at six weeks gestation and her lab work was within normal limits. Her labor was prolonged and there was fetal bradycardia, but the family was undecided about C-section, so vacuum instrumentation was attempted. The fetal heart rate decelerations continued, with a failed vacuum attempt and concern for shoulder dystocia, so a decision was made to deliver by STAT C-section. The newborn intensive care unit (NICU) team was notified and present at time of delivery. The infant was resuscitated with intubation in the delivery room and transferred to NICU for further management.

At admission, the infant's hemoglobin was 13.4 gm/dL, but dropped to 6 gm/dL within a few hours; severe subgaleal bleeding was noted on exam. The infant was resuscitated aggressively with multiple boluses of fresh frozen plasma, cryoprecipitate, and packed red cell transfusions to correct coagulopathy and hypotension. Skull X-ray and cranial ultrasound findings were consistent with a very large subgaleal hemorrhage (SGH). CT scan of the brain revealed a right frontal bone fracture, large amounts of blood in subgaleal space with relatively small subarachnoid and subdural hemorrhages. On the second day of life, the infant had seizure activity that was treated with levetiracetam (Keppra). By the third day of life, the infant remained hemodynamically stable with reduced swelling and edema around the occiput and neck. An MRI of the brain showed intraparenchymal, subarachnoid hemorrhage involving the right cortex and concern for acute infarctions involving similar distribution in right parietal/temporal/frontal regions and corpus callosum, SGH. The patient continued to improve without seizure activity, with progressive resolution of neck edema/swelling. The parents were updated on the guarded prognosis and the high risk for long-term neuro-developmental problems.

Bilirubin peaked at 7.1/0.8, then trended down thereafter. An EEG was mildly abnormal with excessive sharp activity, which was nonspecific for seizures and indicated mild diffuse cerebral dysfunction. The infant was discharged 13 days after birth in a stable condition. The discharge physical exam was notable for

Neonatal complications associated with vacuum-extraction deliveries

Scalp Injuries, bruising, hematoma
Large caput succedaneum
Subgaleal hemorrhage
Cephalhematoma
Intracranial hemorrhage (subdural, subarchanoid, intraventricular and cerebral)
Skull fracture
Seizures
Anemia
Severe/persistent metabolic acidosis
Shock
DIC
Hyperbilirubinemia
Shoulder dystocia
Clavicle fracture
Brachial plexus Injury
Retinal hemorrhage
Subconjunctival hemorrhage
Fetal/Neonatal death

showing a resolving subgaleal hematoma with minimal bruising over the eyelids and occiput, and grossly normal neurological examination. The infant went home breastfeeding successfully and was discharged on Keppra for seizure prophylaxis, with a plan for repeat EEG and MRI brain and close follow-up with a pediatric neurologist, NICU follow-up clinic, and occupational and physiotherapist and pediatric hematology. At 24 months old, she continues to do well; her growth and development are good and she shows no significant neurological deficits.

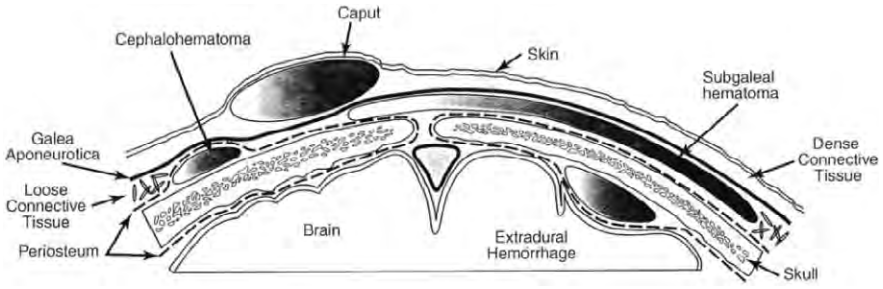
SGH occurring during the neonatal period is a rare complication, but it is important for all medical staff working with neonates to remember that even though it is rare, it is associated with significant mortality, 12-25%, when not recognized. It was first reported by Naegele in 1819 and later was cited by Virchow in 1863.[1] It was initially named "false cephalohematoma," then was renamed by Malmstrom in 1957 as "subgaleal hemorrhage," when he first introduced the vacuum extractor.[2]

Anatomically, the scalp has five layers. From top to bottom, the layers are skin, dense connective tissue, galea aponeurotica, loose connective tissue, and periosteum. SGH occurs in the loose connective tissue underneath the galea aponeurotica. This area has many emissary veins which connect the intradural venous system with superficial scalp veins.[3] These veins are torn when shear tractional force is applied to the skin over the scalp. Bleeding occurs in the potential space between the galea aponeurotica and the periosteum of the skull. Subgaleal space extends from the orbital ridge to the nape of the neck, and can accommodate a large amount of blood—up to several hundred milliliters in a neonate (50-80% of the blood volume).[4]

Over the past three decades, however, there has been a drastic decrease in instrument deliveries in conjunction with an increase in C-sections for difficult deliveries. Instrument-assisted deliveries are associated with an increased risk of birth trauma (Table 1). Vacuum extraction is used when the second stage of labor is prolonged, when the mother is unable to push effectively, or when there is non-reassuring fetal heart rate so that shortening the second stage of labor is necessary. Vacuum extraction is used successfully most of the time, but difficult vacuum extractions are associated with neonatal complications. Difficult vacuum extractions could include cup dislodgements, more than three extractions, or a total duration exceeding 15-20 minutes.[5, 6] Nulliparity, fetal malposition, and mid-pelvic fetal station are some of the common risk factors associated with failed vacuum extractions.[7, 8]

FIGURE 1

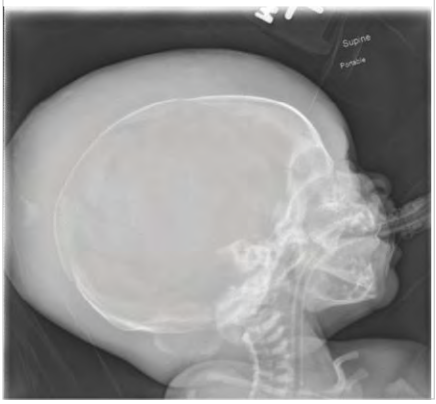
Schematic representation of the five anatomic layers of the scalp and their relationship to various hemorrhages that may develop within this layers.[3]



Subgaleal hemorrhage is a rare complication following vacuum-extraction delivery, but there are case reports of SGH occurring following caesarian section and even with spontaneous vaginal delivery.

FIGURE 2

X-ray showing extensive soft tissue swelling along the vertex of the skull consistent with a large subgaleal hemorrhage



Incidence is 0.1-0.6/1000 of all deliveries and is 3-7.6/1000 following vacuum-assisted births.[9, 10] Vacuum use is reported in 49% of all instances of subgaleal hemorrhage. Bleeding is gradual and may not be apparent right away after delivery; bleeding may occur over several hours. A large SGH could be confused with large caput or cephalhematoma (Fig.1). SGH usually presents as a boggy, fluctuant swelling. Mainly accumulating in dependent areas, in severe cases it can cause elevation and displacement of ear lobes and puffiness of the eyes. When not recognized in time, massive subgaleal hemorrhage can lead to hypovolemic shock, DIC, persistent metabolic acidosis, and death, despite volume resuscitation.

Management of SGH includes a prompt initial assessment by an experienced staff, pediatrician, or neonatologist, with careful examination of scalp in an infant born after a vacuum delivery or if the delivery has been difficult. Monitoring hemoglobin/hematocrit and measuring head circumference around the clock during initial period is critical. Diagnosis can be confirmed by MRI/CT scan/head ultrasound once infant is medically stable (Fig.2). If SGH is seen following a non-traumatic delivery, a coagulation screen should be considered to rule out bleeding disorders.[11] Treatment per se is related to blood loss: aggressive fluid boluses/blood transfusion to treat hypotension, coagulopathy with fresh frozen plasma. Recombinant activated factor VII has been used

in some cases to stop hemorrhage in infants where hemorrhage is not controlled with FFP and platelet transfusion. More severe cases may include cerebral involvement with seizures that require treatment and neurology involvement, or intracranial extension that requires neurosurgery evaluation. Monitoring for hyperbilirubinemia is important during resolution of a large subgaleal bleed, as some infants will require phototherapy. Once bleeding is controlled, the swelling generally resolves over weeks and there is a good prognosis, but it is prudent to have close neurology follow-up to identify and evaluate for any residual neurological deficits during the first year of life. Poor neurodevelopmental outcomes are seen with severe SGH.[9]

SGH is an important cause of preventable morbidity and mortality in newborn infants. It is important to educate healthcare workers involved in caring for newborn infants regarding complications following instrumental delivery. Given the insidious nature of bleeding from such deliveries, increased awareness on identifying SGH is important. Though SGH is a rare complication, early recognition, careful monitoring, and prompt treatment is critical for improving survival and outcomes. **MM**

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Meckel's diverticulum: Not just a pediatric diagnosis

BY CLAIRE JANSSON-KNODELL, MD, AND DANTE SCHIAVO, MD

A 19-year-old male with a history of mild intermittent asthma on as-needed albuterol presented with upper respiratory symptoms, fever, and headache. He had been using daily NSAIDs for symptom relief. He was found to have *Fusobacterium* bacteremia, likely related to sinusitis. During his hospitalization, he had persistent headaches; imaging revealed a cavernous sinus thrombosis that required anticoagulation. Prior to initiation of antithrombotic therapy, he developed severe hematochezia with output of 1.5 L of bloody stool over a few hours.

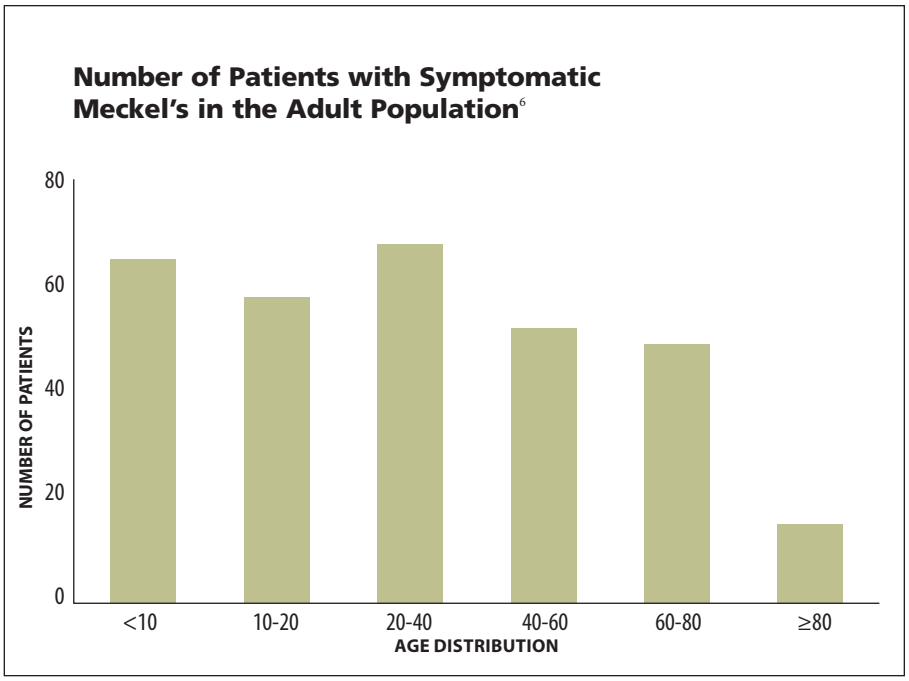
Physical examination showed vitals of HR 94/min and BP 99/57 mmHg. The abdomen was soft, diffusely tender, not distended, with normal bowel sounds. Bright red blood was seen on rectal exam.

Laboratory studies showed a significant hemoglobin drop from 14 g/dL to 6.9 g/dL. He required 3 units of packed RBCs for resuscitation, in addition to vasopressors for septic shock. EGD and colonoscopy, including intubation of the terminal ileum, were unremarkable. CT enterography revealed a thickened, blind-ending segment of small bowel extending from the ileum, concerning for Meckel's diverticulum. An open surgical resection was performed. Pathology revealed a 2-cm diverticulum with focal ulceration and gastric heterotopia. The ulceration and bleeding were likely related to his heavy NSAID use before admission.[1] After the procedure, his bleeding resolved and he was able to begin using warfarin as treatment for his cavernous sinus thrombosis.

Discussion

While Meckel's diverticulum ranks as the most common congenital anomaly of a child's gastrointestinal tract, it is somewhat rare for it to become clinically significant in an adult. It is a result of incomplete obliteration of an individual's vitelline duct during embryologic development, which leads to a small-intestinal outpouching.[2] Meckel's diverticulum is notable in medical texts for the rule of 2's: 2% of the population, symptomatic before age 2, length of 2 inches, 2 feet from the ileocecal valve, and 2 types of heterotopic mucosa.[2] Epidemiologic studies estimate actual prevalence to be 1.2%.[3] Approximately 6% of those with a diverticulum will develop a complication such as bleeding, intussusception, obstruction, or perforation which requires surgery.[4,5] About half of those will occur before the patient reaches age 10.[6] In adults, it is diagnosed via radiographic imaging after no source is identified on endoscopy. It can be visualized with the 99m technicium-pertechnetate Meckel's scan, which was designed to detect aberrant gastric mucosa.[6] The treatment of choice is surgical resection, which was performed in this patient.[7]

This case highlights the role of age in causes of hematochezia and the need to consider a traditionally pediatric pathology manifesting later, in adulthood. Meckel's diverticulum should be a consideration in the differential diagnosis for GI bleeding, particularly in patients under age 40. The differential of hematochezia changes based on age. In older individuals, angio-



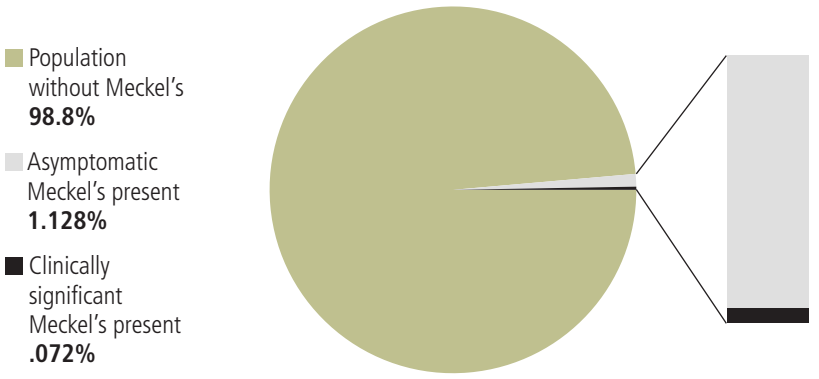
ectasias and diverticulosis are common. Inflammatory bowel disease, Dieulafoy lesions, neoplasia, Meckel's diverticulum, and polyposis syndromes need to be considered in young adults. This patient's case serves as a reminder that congenital anomalies extend beyond the scope of pediatrics and have clinical relevance in adult practice. **MM**

Claire Jansson-Knodell, MD, is a resident in internal medicine at Mayo Clinic. Dante Schiavo, MD, is senior associate consultant in pulmonary and critical care at Mayo Clinic.

*Figures designed by author using data from the referenced studies. These are independently designed and are not reprints of previously published graphs.

Symptomatic versus Asymptomatic[3,4,5]

Epidemiology of Meckel's Diverticulum



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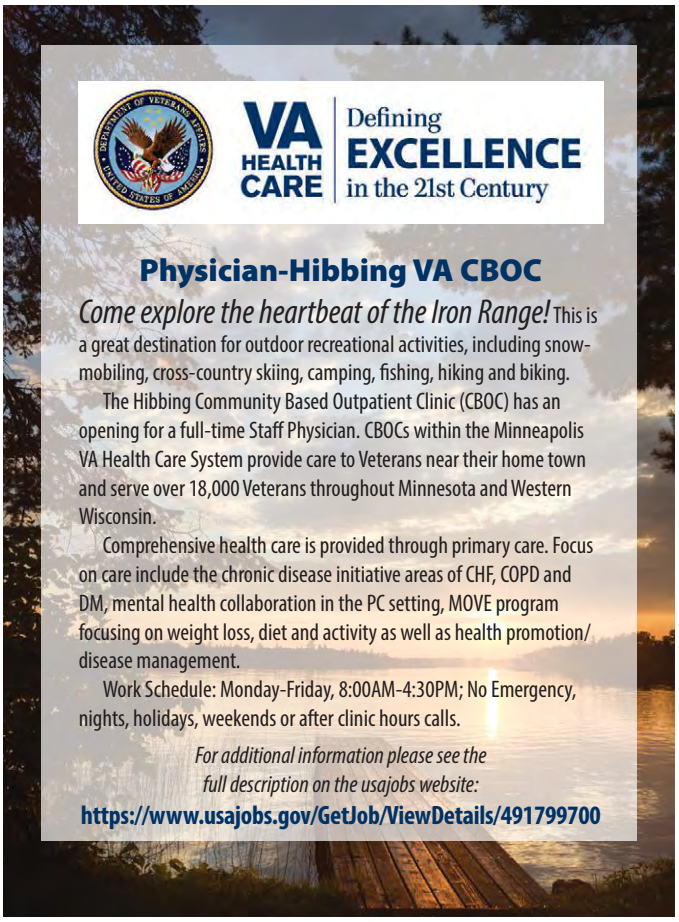

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Toenails and teenage dramas

BY CARLY DAHL

I stood by her bedside, holding her hand. Glancing down, I noticed her toenails were painted pink and blue, alternating in color with each toenail. I remembered doing that to my own nails as a child. She told me she had painted her nails during her hospital stay. She was on the pediatrics floor of the hospital, where things like nail polish are available to make the stay more bearable and less intimidating for kids. Her foot was in a cast and when I asked her what happened, she said she was "jumped" by a group of girls. Her eyes flickered back to the TV, which was playing a teenage drama; she was unfazed by what she had just said.

My team finished preparing her Nexplanon kit and she noticed. Her hand squeezed mine tightly when she saw the anesthetic and needle. She moved away from it with the exaggeration that only a child can have, in fear of the impending poke. She feigned exquisite pain, even after the lidocaine had settled in. She watched intently as the Nexplanon kit pushed the birth control easily into her arm, which was as equally dramatic an affair for her as the lidocaine injection. She asked us to stay with her for 15 minutes after the procedure, to "make sure she was okay." It was endearing. Immediately after we were done, she asked me for lunch without any regard or comment about her new contraception. Her eyes glanced up at me and she asked, "How old are you?" I told her, and asked her the same question. "Twelve," she said. Twelve years old. My heart sank.

She was, in every sense of the word, a kid. She was just a kid. A cute, pleasant, wonderfully dramatic, kid. Not even a teenager. We were putting a Nexplanon in a 12-year-old because she was being sexually trafficked in Minneapolis. She was unfazed by her recent assault, and clearly unfazed by her sexual exploitation, but I was not. I knew what we were doing was right; I didn't doubt it. A pregnancy would certainly complicate her life. But it was clear to me she was just too young. Too young to have so many traumatic life experiences in little more than a decade. Too young to process the emotional pain of what was happening to her, too young to be sexually exploited, too young to have to worry about pregnancy, STDs and the violence she was undoubtedly subjected to. There is never an age when these atrocities are acceptable, but the idea of a child subjected to them made them seem even more criminal.

Walking down the painted halls of the pediatric floor 15 minutes earlier, all I had known was that a 12-year-old girl needed a Nexplanon because she was being sexually trafficked. Leaving the pediatrics floor, all I knew was that this sexually exploited child was not going to be a child having her own child—at least not for another three years. But what about everything else in her life?

We moved on through our day without another mention of her, but I've thought of her often since. I will likely never see her again, but I'm quite sure I won't ever forget her. She couldn't process what was happening to her, her immaturity at that point blocking her emotions. I wondered then, and now, how I could process the cruelty she lived with—and what I can do to stop it from happening to other girls. **MM**

Carly Dahl, MD, just finished medical school at the University of Minnesota and is a first-year resident in obstetrics and gynecology at Northwestern University. This essay was inspired by an experience during an OB/GYN rotation and was an entry in the 2017 *Minnesota Medicine* Writing Contest.

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