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DEMENTIA RESEARCH

Researchers across Minnesota are seeking ways to understand, diagnose and treat Alzheimer's disease and related dementias, early and often.

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DEMENTIA RESOURCE CENTERS

Minnesotans are ready for a new, more hopeful medical model for dementia care.

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ALSO

POISON CONTROL CENTER marks 50 years PAGE 8

FOOD INSECURITY impacts health PAGE 17

COHORTING improves COVID results PAGE 46



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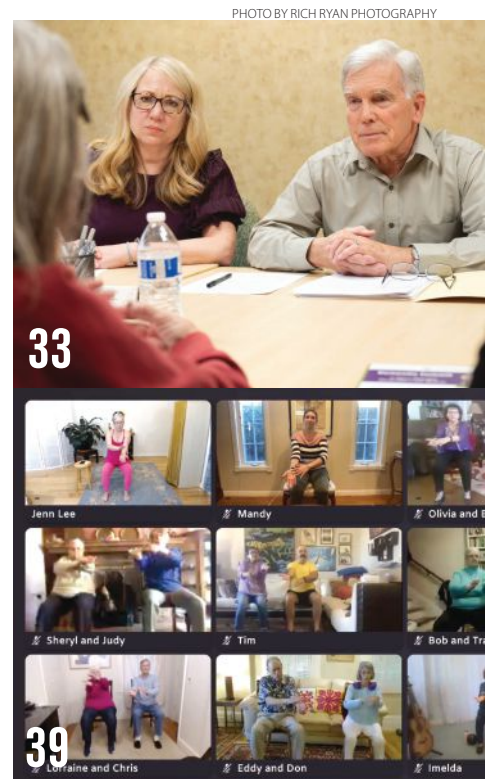
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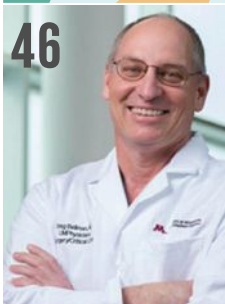
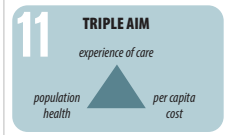
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Colin West, MD, PhD

Growing in response to a disaster

Spring has sprung across Minnesota and we all look forward to warmer weather and the opportunity to enjoy the natural beauty our state offers during this season. We are also hopeful that we are finally emerging from the worst the last two years of the COVID-19 pandemic has wrought. Simply returning to where we were prior to the pandemic, however, is not enough. To honor our losses, we should aim for post-traumatic growth, to be better than we were before.

To honor our losses, we should aim for post-traumatic growth, to be better than we were before.

One way to think about this process is to consider the emotional phases of disaster response. These phases will resonate with everyone who has experienced the pandemic. In Phase 1 (the pre-disaster phase), uncertainty reigns supreme. How do we protect ourselves and those we care about? What does the future hold? Should we have been better prepared? Phase 2 is the disaster-impact phase. These effects vary, from disbelief to dismay to panic, with rapid conversion to a focus on protecting ourselves and others.

Phase 3 is the immediate response to the emergency, the heroic phase. Our core professional values, including altruism,

drive behaviors to run toward the crisis as we advise others to seek safety. Our own needs typically are secondary concerns during this phase. A surge of positive

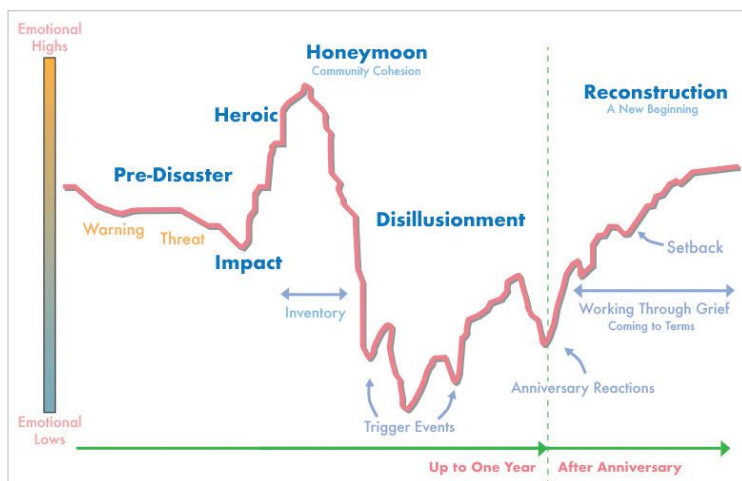
shared purpose predominates. Unfortunately, these emotions erode in the face of prolonged strain, and the disillusionment characterizing Phase 5 sets in.

This phase involves tension as our inherent optimism and hopefulness struggles against chronic stress, exhaustion and discouragement. As support scales back, the gap between needs and resources drives further negativity. This phase of disaster response presents particular risks for mental health issues and the longer the disaster remains unresolved, the deeper and more entrenched the effects of disillusionment become.

The final emotional phase of disaster response is reconstruction, where recovery begins. Phase 6 can be bumpy, with setbacks and acknowledgment of shared grief, but the overall trend is positive. Importantly, the goal of reconstruction and recovery is not just to restore the pre-disaster state but to achieve post-traumatic growth in response to the disaster experience. This can provide meaning to the disaster experience and hope that we are better prepared for future disasters.

Make no mistake, we have all experienced a disaster over the last two years. These phases of emotional response to our experiences will feel familiar to most. Bearing witness to suboptimal individual and societal reactions and avoidable harm has made the impact of the pandemic on healthcare professionals even worse. By drawing from understanding of the phases of emotional response to these situations, we can help our collective recovery and rebuild even better for ourselves, our colleagues, our patients and our communities. Not only can we accomplish this, we must. **MM**

Colin West, MD, PhD, is professor of Medicine, Medical Education and Biostatistics, Mayo Clinic. He is one of three medical editors for *Minnesota Medicine*.



emotion marks the transition from Phase 3 into Phase 4, the honeymoon period. During this phase, a sense of community and

Lori Swanson


Former Minnesota Attorney General Lori Swanson represents physicians, clinics, and health care providers in a wide array of legal matters. She draws on 20 years' experience as Attorney General, Solicitor General, and Deputy Attorney General to provide smart, seasoned, and pragmatic strategic counsel and tenacious advocacy to health care clients.

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When a patient wants unadvised treatment

Is a physician ethically obligated to honor a patient's demand for an unsubstantiated and possibly unsafe therapy?

BY JOEL WU, JD, MPH, MA, HEC-C; JAIME KONERMAN- SEASE, PHD; AND JUSTIN PENNY, DO, MA

YES

It is well accepted that the principle of autonomy should carry equal weight to each of the three other principles of medical ethics (beneficence, nonmaleficence and justice); there is no established hierarchy or relative priority among the principles, and no absolute solution to resolve conflicts between them. However, in the United States, respect for individual patient autonomy has gradually expanded to become the most influential principle informing the practice of medicine. As patient information has become more transparent, and as medical information has become more widely available, the disparity in knowledge and power between patients and doctors has decreased. The “democratization of medicine” describes the idea that as patients gain more knowledge and more resources, they also gain more freedom and power within a system that has historically acted paternalistically and

NO

The affirmation of autonomy means aligning care with patient goals and values; however, as previously noted, autonomy is not the only relevant consideration. Without equal commitment to the principles of non-maleficence, beneficence and justice, medicine would be reduced from a special caring profession to a transactional service where individuals are no longer patients, but customers who can demand a service regardless of any other moral or ethical concern.

Originally conceived as a protection from unconstrained paternalism, the principle of autonomy starts with a right to refuse unwanted treatment; however, this obligation does not create a positive right to compel inappropriate treatment.

Physicians have ethical and professional obligations not only to align treatment with patient goals and values, but to cause no

YES (continued)

without accountability, particularly for groups that have lacked access to knowledge and resources.

In a free society that values individual liberties, people should be able to direct their own lives and interactions without unfair and unnecessarily burdensome barriers or constraints. As long as there are no harms to other individuals or the community as a whole, people should be free to engage in activities and to secure the services of others without judgment or limitation. Carving out a space in society where those liberties are lost is inconsistent with our society's commitment to individual freedoms; failure to allow patients a choice is a continuation of paternalism and ethically problematic.

It is essential that informed consent be obtained for medical treatment. As long as patients know the full risks and benefits of a particular treatment, are aware of the alternatives and fully understand the nature of their condition, it is ethically appropriate to honor a patient's request for an unsubstantiated and possibly unsafe therapy. This corrects the power imbalance in medicine, where for too long physicians have withheld therapies that patients would prefer to try in the face of serious life-limiting illness. Physicians justify withholding lesser-known therapies under the banner of protecting the patient, or beneficence. Withholding therapies from patients because we do not know their complete effects is a narrow understanding of beneficence; further, this fails to recognize that acting in the patient's best interest is aligned with a patient's choice and values. Therefore, if a patient wishes to try a therapy with little to no evidence regarding effectiveness and safety and the patient is aware of the risks, it is more important to honor the patient's choice than to prevent a potential harm.

In this sense, intervention with a potentially ineffective and unsafe therapy is more appropriate than failure to intervene at all. Omission despite the request of the patient is a serious harm to a patient's autonomy. While treatment with unsubstantiated and possibly unsafe therapies might lead to bad outcomes, at least it honors the patient's freedom to direct their own treatment.

The authors believe it is unethical to provide unsubstantiated and unsafe interventions to patients, including when they are requested or demanded by patients. An important part of healthy discourse in society is to try to understand and represent opposing views in good faith. The authors present a good faith attempt to represent a view they disagree with, along with the views that they hold. We hope that this format allows for readers to begin to see the relative strengths and weaknesses of these views and how they might interact.

NO (continued)

harm, to only perform interventions that may benefit the patient in ways consistent with the patient's goals and to treat all patients and community members fairly. Using specialized medical knowledge and societal power in ways that cause harm, don't benefit patients or are unfair, would be inappropriate and unethical.

Only licensed providers are authorized to offer medical treatment and care in our society, by virtue of their special knowledge and skill. When patients seek care and help at clinics and hospitals, they rely on those institutions to ensure that doctors and nurses who practice there are competent and will provide appropriate care. All of us should be able to be confident that when we go to see a doctor, they will use their special skill not to harm us or deceive us—even if it's something we ask for or may not understand. If physicians act in ways that result in harm to patients, even at the patient's request, they are still responsible for the harm—morally and, potentially, legally. When licensed providers act in ways that are inconsistent with their professional obligations and norms, their actions erode the credibility and integrity of the entire public health and medical enterprise. Unethical and inappropriate actions by one physician, even at the request of a patient, will undermine the credibility and effectiveness of all other physicians, scientists and caregivers.

The absence of risk for harm is insufficient reason to compel a physician to provide a certain treatment. Although there may be a psychological benefit or a placebo effect, it remains ethically problematic to perform interventions essentially based on a hope of a positive effect, with no underlying foundation in evidence or reason to inform an expected outcome. Without evidence, it cannot be known if an intervention has any causal relationship to an outcome, could cause harm, may be part of a kind of deception and contributes to erosion of professional and institutional integrity.

The use of scarce medical resources does not happen in a social or historical vacuum. As the recent pandemic has brought into sharp relief, healthcare resources are scarce and are often distributed in inequitable and unfair ways. Unfair allocation affects different groups unequally, with some in community bearing disproportionate burdens and others accruing disproportionate benefits. Often these groups that experience the greatest burdens are the most vulnerable in community, like groups defined by race, class, sex/gender or geography. Consumption of scarce resources to accommodate demands for harmful or ineffective interventions deprives other community members of fair opportunities for appropriate treatment and recovery. **MM**

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Poison Control System

50 years of offering help to physicians, first-responders and worried members of the public

BY LINDA PICONE

The Minnesota Poison Control System (Poison Center), located inside Hennepin Healthcare, has offered 24-hour emergency treatment information since 1972 to Minnesota healthcare professionals and the public, at no cost to those using the service.

“We really are a one-stop shop for people across the spectrum,” says Jon Cole, MD, medical director for the Poison Control Center and emergency medicine physician at HCMC. “From a concerned parent who has a child who touches or gets exposed to a household chemical that may or may not be dangerous—fortunately almost none of them are—all the way up to an intensive care physician looking to make very specific choices about a critically ill poisoned patient who is on multiple infusions, dialysis, with a consideration of starting ECMO. We really do run that gamut of basic public health information to decrease healthcare utilization safely, while also giving very specific, unique advice for a really small subset of critically ill patients. We love doing all of that work.”

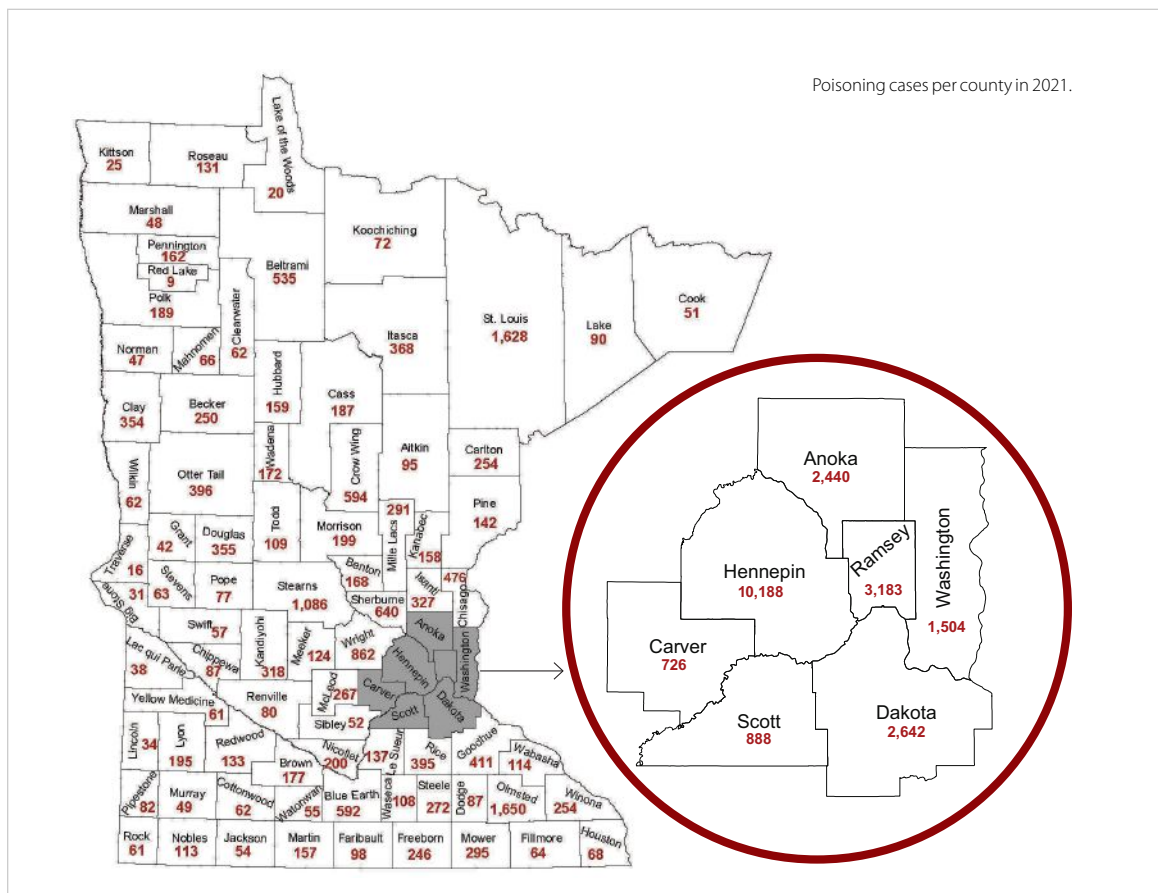
Over 50 years, the Poison Center has grown—today there are 16 pharmacists, one nurse, three associate medical directors, Cole, pharmacy students who provide information over the phone and several consulting toxicologists—and seen new kinds of possible poisonings. It is one of 55 poison centers nationwide accredited by the American Association of Poison Control Centers.

The Poison Center is funded by the state, through the general fund and allocated by the Minnesota Department of

Health, and the federal government. It also has a few small research contracts.

“From a tax-dollar standpoint, it’s saving the state money because of all those healthcare visits we can help people avoid,” Cole says. “Nine times out of 10, we can safely keep you in your home with some anticipatory guidance and some basic home remedies. That makes life easier for parents, saves them money in terms of co-pays, saves the system money and, during a pandemic, keeps people from having to go out and possibly be exposed to an infectious disease—it’s a win on all fronts.”

Cole and Samantha Lee, PharmD, director of the Minnesota Poison Control System, say that they want individuals to call whenever they are worried about what their child—or they, themselves—has been exposed to. The Poison Center also has lines for calls from people whose preferred language is not English.



“We’re here 24 hours a day, seven days a week, 365 days a year,” says Cole. “If you’re worried that your child has been poisoned on Christmas Eve, there is someone here working, with physician toxicologist backup, to answer your questions. We’re always here.”

“At the same time, we want our physician colleagues to call us, too,” Cole says. “We want to know when you have your third opioid overdose patient in the emergency department. That could mean a new and novel opioid in our community. We also want to know about those strange and bizarre poisonings where we might

be able to help you turn the tide in a unique circumstance where maybe the patient wouldn’t have a good outcome without some obscure medical knowledge—which we have.”

Painfully nerdy

The staff of the Poison Center is, Cole says, “painfully nerdy.” They, like all healthcare providers, keep up with trends and research through journals, collaboration with their peers and being active on national boards. They share data with other poison

Annual report

The Poison Center issues an annual report that details the type of calls it receives, actions taken, the kind of poisons involved and more. Highlights from the report include the information shown here. The full report can be seen at <https://mnpoinson.org/about-the-poison-center/annual-reports/>.

2021 key facts and stats

Number and type of cases

The Poison Center managed a total of 44,319 cases in 2021. While 41,834 cases involved an exposure, the remaining 2,379 were requests for poison information. 91% of exposures in a residential setting were safely managed at home with Poison Center assistance. 28% of patient cases involved health care providers seeking treatment recommendations. 81% of callers said they would have sought emergency medical attention if the Poison Center were not available.



Age of patients

Poisonings affect individuals of all ages, from babies to seniors. Approximately 36% of exposure cases involved children under age 6. More serious outcomes were typically seen in teenagers and adults due to a larger number of intentional exposures occurring in these groups.

Top five substances involved in poisoning

NON-DRUG

- Household cleaners
- Cosmetics, personal care items
- Alcohols
- Foreign bodies, toys, silica gel packets
- Plants



DRUG

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



64% of exposures involved prescription and/or over-the-counter medications



Caller site

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

- 25,111 residence
- 11,590 healthcare facility
- 4,024 other
- 822 workplace
- 132 school

control centers to look for trends and things they can do better. The four physicians working with the Poison Center have primary specialties; Cole is an emergency medicine physician who did a fellowship in medical toxicology.

“All of us do this because we really believe in the mission, we really believe in public health, we really believe in serving a patient population that sometimes gets neglected,” Cole says. “For me, as an emergency physician at a Level 1 trauma center that’s a safety net hospital, that mentality of anyone, any time, for whatever reason dovetails perfectly with what we do at the Poison Center.”

Poison events in 2021

The number of calls to the Poison Center was slightly less overall during the pandemic: about 44,000 in 2020 and just under 42,000 in 2021, compared to about 46,000 in pre-pandemic 2019. But, Lee says, there were more physician and provider calls. That’s a good thing, she and Cole say, because it means more professionals are seeking their expertise.

The kinds of possible poisonings were somewhat different because of COVID. In 2020, there were calls about possible poisoning from ivermectin and hydroxychloroquine, drugs that were touted by some to prevent or treat COVID (they have since been shown to be ineffective) and that can have serious side effects. In 2021, Lee says, there were calls about children being exposed to the reagents in COVID home test kits.

Poison Alice

Alice Lange, a dental hygienist with no training in poisons, noticed a posting at the Hennepin County Courthouse about testing for a position at the new Poison Control Center. She took the test, got the job, essentially trained herself by working with physicians and nurses in the ER at Minneapolis General Hospital—and became “Poison Alice,” the first full-time employee of the Poison Control Center. She started in January 1972 and took 70 phone calls about possible poisonings in her first month on the job.

Lange noticed that plants—sometimes poisonous ones—often attracted children, so she created a Poison Garden of artificial flowers, which traveled to health fairs to demonstrate for parents and children how to avoid some plants. She later wrote a book on poison plants, which was used by poison control centers around the country. A plaque in her honor hangs outside the Poison Center.

The Minnesota Poison Control System will host a 50-year celebration sometime this summer, remembering and honoring Alice Lange as a part of that event. Details will be posted at mnpoison.org.



“All of us do this because we really believe in the mission, we really believe in public health, we really believe in serving a patient population that sometimes gets neglected.”

— JON COLE, MD, MEDICAL DIRECTOR FOR THE POISON CONTROL CENTER AND EMERGENCY MEDICINE PHYSICIAN AT HCMC

Both years, and continuing, Cole says, include calls about hand sanitizers. “We still don’t know for sure that hand sanitizer is safe,” he says. “When the pandemic hit, manufacturing of hand sanitizer makers became much more haphazard and regulations weren’t followed as closely. In 2020, there were some really unfortunate cases of people dying of methanol poisoning from contaminated hand sanitizer. Methanol is one of the more deadly poisons in existence.

“It’s a much more problematic riddle to solve when we get these cases where a child, through their normal exploration of the world, drinks a little hand sanitizer, since hand sanitizers normally contain alcohols that are safe in small amounts. Up to 2020, we would have thought a small amount of hand sanitizer ingested by a child was nothing to worry about and advised parents or caregivers to give the child a snack and a little bit of sugar and they will be fine. But now, their vision or even their life could be at risk.”

Ways to get help

Anyone who has a poison-related question or suspects a poisoning can get immediate help from a poison expert by calling 1-800-222-1222. Help is also available online 24 hours/day at mnpoison.org/webpc/, an online triage tool and app that guides users through a series of questions.

MNPOISON.ORG

A free online poison prevention training program is available at training.mnpoison.org. The two-hour course of five modules, plus pre- and post-testing and evaluation trains participants how to teach others about poisonings and what to do in an emergency.

The website also includes more poison prevention information; access to free materials, including information sheets; multilingual materials; posters; brochures; and more.

The Poison Control System has recently started a quarterly newsletter, Poison Prevention Antidote, at <https://mnpoison.org/poison-prevention-antidote>. **MM**

Linda Picone is editor of *Minnesota Medicine*.

Health Systems Science

One medical student's take

BY LEIF OLSON, MD

Medical school is full of learning—an overwhelming volume of information directed at us with excess force likened to water from a firehose. Yet, despite our academic achievements, according to the most recent annual AAMC survey, most medical school graduates lack adequate confidence to begin residency. We can never know it all and some of what we learn in med school is obsolete even before we graduate. But, luckily, we learn from physiology that dynamic processes are the stuff of life. Rather than a single destination, it's more about the journey. We pursue our own dynamic steady state in striving to maintain mastery, always working to keep up with new evidence to better provide what patients need. Naturally, curriculum must keep up too.

Health systems science in medical school

A century after the Flexner report established basic and clinical sciences as the two pillars in medical education, a “third pillar,” health systems science (HSS), continues growing out of the need for health professionals to provide necessary care that accounts for social, environmental,

economic and other complex systemic factors affecting health. Accordingly, HSS is defined as “the study of how healthcare is delivered, how healthcare professionals work together to deliver that care and how the health system can improve patient care and healthcare delivery” (Skochelak, 2020). Just as studies in physiology enable us to understand complex dynamic mechanisms within organ systems, studies in HSS illuminate systemic dynamics in social determinants, team science, population health, policy and economics and other areas of study.

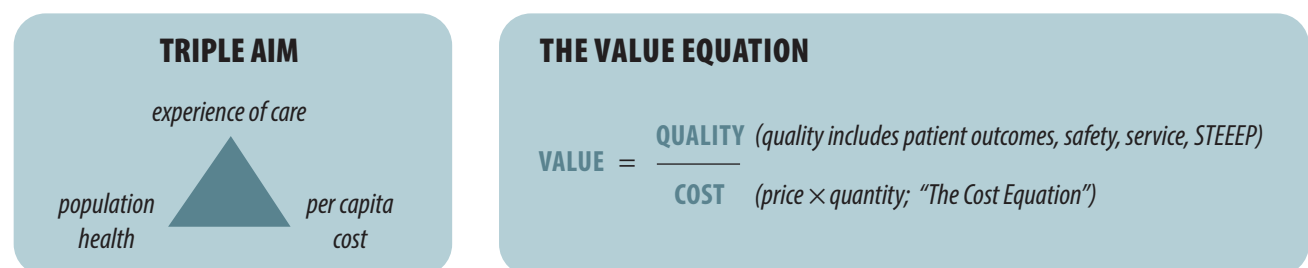
Increasingly baked into existing core curricula in alignment with competency-based medical education and ACGME milestones, HSS topics are an antidote to the cognitive dissonance that otherwise develops between our learning in classrooms and our experiences in clinical encounters. For example, in the University of Minnesota Medical School Duluth Campus curriculum, medical students benefit from early introduction to a variety of community-based experiential learning outside of traditional basic and clinical sciences. By volunteering at a student-run free clinic and spending time in rural clin-

ics and hospitals across Minnesota, we begin to understand that factors outside of the clinic often have greater effects on patients' health than anything we can provide in a single clinic visit. Economic and financial barriers are often cited as key problems.

Health care economics is one example of a complex topic greatly affecting patients and difficult to tackle in curriculum; ripe for study through an HSS lens. Recently, most medical students nearing graduation reported (via an AAMC questionnaire) feeling prepared to apply principles of high-value care, but our training has historically not focused much at all on costs of delivery, waste and affordability, and it's unclear what “value” means to students. Consequently, in one survey involving residency training institutions across the nation, less than one third of residents reported feeling that medical school training prepared them very well to practice cost-effective medicine. Our work is intrinsically tied to many patients' financial woes and even bankruptcies yet, despite all our training, a deeper economic understanding often feels beyond reach.

FIGURE 1

Relationships between quality, the Triple Aim, value, cost and price



Quality and value in healthcare

Rather than looking at what we are paying for, we might begin exploring healthcare economics by zooming out to more broadly see what we are *aiming* to pay for or to provide. In other words, what quality is desired? But quality is not easy to define. In *Zen and the Art of Motorcycle Maintenance*, Robert Pirsig wrote about quality, “If no one knows what it is, then for all practical purposes it doesn’t exist at all. But for all practical purposes it really does exist.” As described by Donald Berwick, quality in healthcare is a match between needs and the products and services produced to meet those needs. In healthcare, some determinants for good quality include favorable patient outcomes, safety and service. Good quality care for individuals is safe, timely, effective, efficient, equitable and patient-centered (STEEEP). The same attributes are used by the National Academy of Medicine to define value-based care.

Unfortunately, in the United States, we are painfully aware that we spend relatively much, much more per capita, living shorter lives with more disease in comparison to most people in other similarly wealthy countries who pay less for better outcomes. So, just as we focus on medical problems because they cause pain and suffering, cost also causes suffering. If we want economics to be subservient to the quality we aim to achieve, then we clearly need to understand cost as part of what we do; this requires us to understand the relationship between spending and quality. We know $\text{cost} = \text{price} \times \text{quantity}$. Value is generally defined in terms of quality and cost ($\text{value} = \text{quality} \div \text{total cost}$), so our definition of value bridges the gap between quality and cost. In this way, cost has no bearing on quality, but cost does affect value: value is diminished whenever costs increase without proportional increases in quality.

Each of the STEEEP components can be applied within the value equation. Using them as goals toward high-value care led to the Triple Aim, which provides a high-level actionable framework towards achieving value: improve the health of the defined population, enhance the patient-care experience (including quality, access and reliability) and reduce per-capita cost of care. The Triple Aim has been widely adopted as an agreeable starting point. Central to discussions at every level of many organizations, between organizations and with policymakers, it provides a common orientation to allow further discussions about value, quality, cost and price (Figure 1).

Where does the money go? Where does it come from?

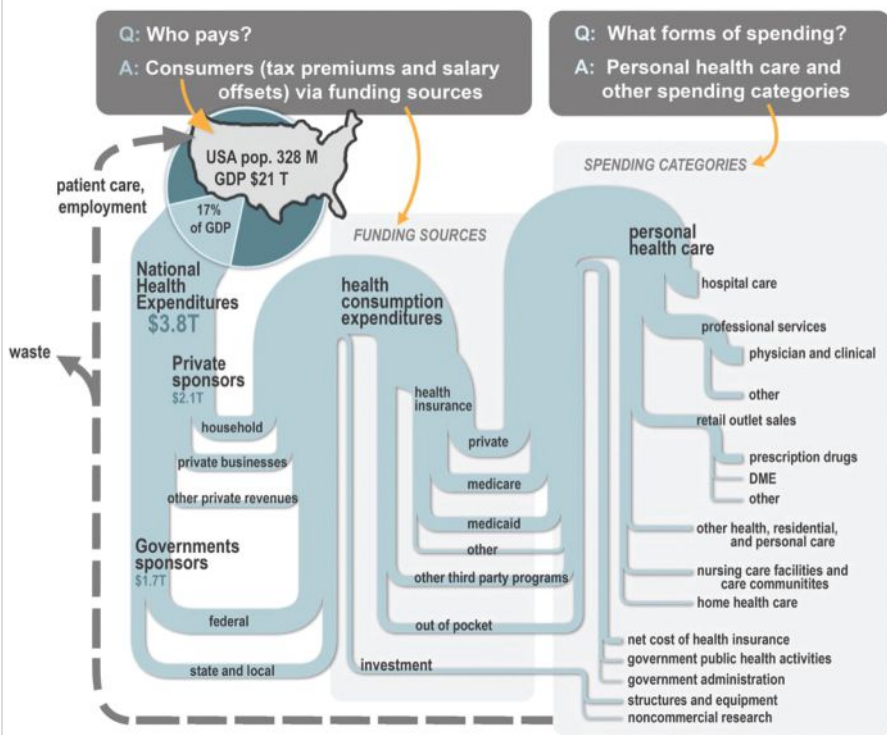
With this understanding of value and quality, we can start to contextualize our alarming \$3.8 trillion (before COVID-19) annual national health expenditure. What makes up this number? Who is paying? Where does the money go? We can start to answer these questions with a brief discussion of expenditures, as in Figure 2, in which we see that the U.S. population of consumers ultimately foots the bill through tax, premiums and salary offsets. Averaging more than \$11,000 per capita, these expenditures flow from consumers, through funding sources, to hospitals, providers and others. Ultimately, these expenditures account for more than 17% of GDP as a result of producing services (healthcare), employment and waste. In this complex and circular cause-and-effect relationship, the population both spends for healthcare and is paid to produce it.

Increasing value by decreasing spending

By simply looking at spending on a national scale, we can start to see how it relates to cost and value: per-capita cost is prohibitively expensive and higher than in other countries where higher value is achieved. Paradoxically, our increased spending *subtracts* value. In other words, much of our spending does not contribute to the quality we aim for. Healthcare

FIGURE 2

National health spending (2019)



Line width is proportional to quantities in US Dollars. Quantities and categories are from Martin et al 2021. Abbreviations: T, trillion; M, million; GDP, Gross Domestic Product; DME, durable medical equipment.

determines only about 10% of population health compared to other determinants (social, environmental, genetic, behavioral).

We spend enough to get what we expect, so the opportunity to find ways to reduce waste seems like a great alternative to despair. Focusing on reducing waste—including addressing failures of care delivery, failures of care coordination, overtreatment or low-value care, pricing failures, fraud and abuse and administrative complexity—could be enough to provide enormous positive change, as these forms of waste account for a whopping 25% of total healthcare spending. Like a surgeon, we need to have a clear understanding about where to cut, from a precise understanding about the anatomy of spending and the value we intend to preserve. Despite awareness of this problem and implementation of several value-based programs, over the past few years, waste has increased, underscoring the importance of addressing the biggest categories

of waste: pricing failures and administrative complexity.

Understanding how our work produces value and cost helps us contextualize it within something bigger than ourselves. HSS provides ways for us to feel empowered to decrease waste without diminishing value, going far beyond the quality improvement and economics outlined here. This broader perspective dissolves the misconception that we should ever be machine-like repositories for knowledge, freeing us to experience a state of mastery not as a stopping point, but as a dynamic state of engagement in lifelong learning. In acknowledging my part within systems, I'm reminded of the often-quoted observation by Paul Batalden, MD: "Every system is perfectly designed to get the results it gets." There are people who benefit from the status quo and many more who do not. As future physicians and often as beneficiaries of complex and expensive health-care systems, we have an opportunity and a responsibility to combat dysfunction by

understanding our place within the systems we inhabit and embody. MM

Leif Olson, MD, is a resident in family medicine in St. Cloud. He wrote this commentary while a medical student at the University of Minnesota Medical School.

The author would like to acknowledge David Power, MD, who served as course director of an independent study elective course in Health Systems Science at the University of Minnesota Medical School and offered generous guidance in drafting this essay.

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Vicarious trauma for surgical residents

A structured program can improve and advocate wellness

BY EMILY J. ZOLFAGHARI, MD; ALEXANDER M. KUEHNE, BA; ARCHANA RAMASWAMY, MBA, MD; CHRISTOPHER J. TIGNANELLI, MD; AND AIMEE MURRAY, PSYD, LP

Trauma not only affects individuals exposed to a stressor or event, but also those with whom the experience is shared, including therapists and health-care personnel. In the healthcare field, traumatic events, such as blunt force or penetrating trauma, may cause vicarious trauma among trauma surgeons through their exposure to victims of trauma and violence. Vicarious trauma, or secondhand trauma, can occur from a multitude of exposures. These include listening to individualized stories from victims of trauma, watching videos of traumatic incidents, reviewing case files or responding to the aftermath of violence and other traumatic incidents.

Anyone working with victims of trauma and violence can be affected by vicarious trauma, but certain risk factors predispose individuals to a heightened sense of vulnerability. For instance, prior traumatic

experiences, a consistent exposure to trauma at work and a lack of an effective supportive process for discussing traumatic content in the work environment increase the chance of developing vicarious trauma. The work of general surgery residents rotating on the trauma service unavoidably immerses them into the outcomes of traumatic injuries. This raises a greater concern for potential mental health consequences compared to other specialties. Rarely, however, are general surgery residents working in high-trauma exposed fields offered mental health professional support, including time for reflection, training during residency about coping mechanisms after traumatic exposures or supervised debriefings. Supervised debriefings have been found to advance the psychological well-being of nurses while also improving their rates of burnout,

thereby allowing them to access mental health resources sooner if needed.

General surgery programs recognize and even advocate for resident wellness, but few programs offer a structured, formal curriculum to surgical residents to improve the work environment and residency culture. Formal wellness programs that focus on debriefings, mindfulness training and coping strategies could prevent vicarious trauma among general surgery residents rotating on high-exposure rotations, such as the trauma service.

Traumatic event exposures among general surgery residents

General surgery residents rotating on the trauma service are immediately exposed to patients in critical conditions following a traumatic injury, directly witnessing the aftermath of trauma and violence firsthand before any medical intervention has begun. To be compliant with the American College of Surgeons guidelines, the presence of a trauma surgeon during trauma bay resuscitations in the Emergency Department is required. Often, the trauma surgeon and general surgery residents manage the care of multiple trauma patients simultaneously or consecutively within a short time span. Trauma surgeons are at greater risk of having lower levels of satisfaction, possibly due to the fast pace

environment of the specialty with the continuous exposure to vicarious trauma. While no studies have reported the extent of vicarious trauma among trauma surgeons or general surgery residents, the concept of post-traumatic stress disorder among healthcare workers, including trauma attendees and residents, has been extensively reviewed. In attempts to reduce vicarious trauma, interventions aimed at promoting self-care and self-awareness should be introduced to general surgery residents.

Interestingly, past literature has reported that self-perceived limitations have deterred healthcare providers from accessing self-care resources, including staffing demands, patient acuity, lack of time off and difficult rotations. Moreover, a general sense of guilt has been associated with self-care, which may further deter surgical residents from accessing resources to reduce vicarious trauma during more demanding services. This shows the need not only for more readily accessible mental health resources, but also for structured debriefings for healthcare employees during work hours.

Although post-traumatic stress disorder (PTSD) among healthcare professionals has been well-documented, few studies have investigated the impact of vicarious trauma among general surgery residents, especially on trauma service rotations.

Personal/professional risk factors

By understanding triggers of vicarious trauma among surgical residents, better resources can be prepared to prevent worsening mental health issues. Among trauma surgeons, 40% have been identified with PTSD symptoms and 15% met diagnostic criteria for PTSD. The diagnosis of PTSD was more prevalent in trauma surgeons caring for more than five critical cases per call duty. Raising awareness of the potential to develop vicarious trauma symptoms among general surgery residents may encourage individuals to access mental health resources, if available. Recent literature has revealed that 22% of general surgery residents screened positive for PTSD symptoms. Interestingly, over

35% of surgical residents were reported as high-risk for developing physician burnout with a significant association between burnout symptoms and PTSD. Yet, appropriate well-being resources are still not

A general sense of guilt has been associated with self-care, which may further deter surgical residents from accessing resources to reduce vicarious trauma during more demanding services. This shows the need not only for more readily accessible mental health resources, but also for structured debriefings for healthcare employees during work hours.

being offered to surgical residents, despite the known increased risk for developing vicarious trauma.

Professional/interpersonal consequences and effects

The impact of experiencing vicarious trauma among surgical residents can affect patient care as residents experience various degrees of psychological stresses such as debilitating anxiety, confusion and loss of confidence. Together, the after-effect of vicarious trauma can contribute to professional burnout, substance abuse and increasingly high rates of suicide among general surgery residents.

The idea of healthcare providers developing mental health ramifications after

caring for trauma patients is not unique. Previous literature has reported that 30% of physicians, nurses and medical students identified an increase in psychological and emotional distress—the “second victim syndrome”—within 12 months of an adverse patient event. The effects of stress during trauma activations and emergency surgery impacts attending surgeons as well as surgical residents; attending surgeons, however, experience significantly lower overall stress compared to senior and junior residents during trauma activations. The level of stress was comparable between junior and senior residents during both trauma activations and emergency surgery. Trauma surgeons and surgical residents are rarely offered mental health services focused on preventing vicarious trauma due to the inherent expectation that they will know how to cope with the stress following traumatic events as this is an intrinsic part of their job.

Solutions/psychoeducational resources

Although surgical trainees report high levels of burnout, residents may only be offered informal coping strategies in the hospital environment. Understanding the potential to experience vicarious trauma is especially important for surgical residents because of the consistent exposure to patients in critical condition following major trauma. Moreover, it indicates the emerging need for proper support services to be offered to surgical residents exposed to vicarious trauma in attempts to remedy mental health concerns. For instance, to address secondary trauma among nurses, several hospitals have developed psychoeducational resources for nurses to access, including Code Lavender, Code Compassion and Code Pause. Each of these evidence-based programs are available to nurses to address their risk of secondary trauma by providing a post-event debriefing session during work hours. A similar program could be implemented specifically for surgical residents to reduce vicarious trauma and to enhance the detection of burnout.

A formal curriculum could provide general surgery residents with mindfulness training and institutional resources to help prevent vicarious trauma. Solutions might include stress-management models, sleep hygiene techniques, access to support groups, professional coaching and training on how to interact with difficult patients. Professional coaching with physicians after six months has been found to be an effective method of reducing emotional exhaustion and overall burnout while simultaneously improving quality of life and resilience. Similar professional coaching sessions could be incorporated into the general surgery residency curriculum to address physician burnout and vicarious trauma ramifications.

Certified nursing assistants were able to decrease burnout and secondary traumatic stress scores after an effective, yet low-cost, 90-minute evidence-based educational program, research shows. The study highlighted the necessity of providing health-care workers with workplace educational programs and resources to not only improve retention, but also to reduce burnout and secondary trauma exposure.

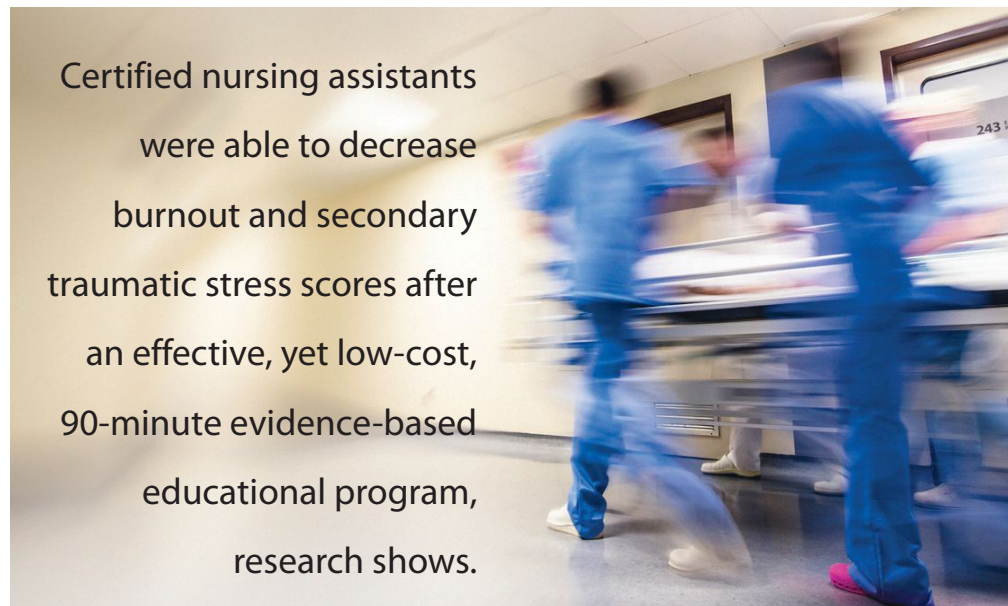
Recommendation

Providing resources after traumatic exposures within the hospital or making proper referrals to professional mental health services would be greatly beneficial to surgical residents working with trauma victims. Implementing formal educational training and awareness about vicarious trauma for residents, along with hosting an on-site hospital support system, would help address the needs of those experiencing vicarious trauma symptoms. Residents within trauma surgery are likely to benefit from an organized, interventional system, such as psychological debriefing or time for reflection between trauma cases, to support their emotional wellbeing and mental health following exposure to traumatic events and critical patient encounters. **MM**

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Increasing food insecurity through the COVID-19 pandemic

Nutritional implications and resources for families

BY VIKRAM J. CHRISTIAN, MBBS, CNSC; JONI GEPPERT, MPH, RDN, LN; AND DIANA B. CUTTS, MD

Food insecurity is prevalent in our society, with certain racial/ethnic groups disproportionately affected. Screening for food insecurity in clinical settings is feasible and often exposes previously unrecognized needs. In the Twin Cities, a May-June 2020 phone survey of nearly 400 Hennepin Healthcare adult primary care patients revealed that 35% worried about affording food.

Food insecurity and iron deficiency are inextricably linked and may lead to neurodevelopmental impairments. There are a myriad of other potentially preventable health concerns that are also associated with food insecurity.

The United States Department of Agriculture (USDA) defines food insecurity as the household-level economic and social condition of limited or uncertain access to adequate food. In 2019, the USDA Economic Research Service estimated that 10.5% of U.S. households were food insecure at some point through the year. This was unchanged in 2020, despite the

COVID-19 pandemic, in part due to pandemic relief programs designed to alleviate hunger. This overall rate obscures very significant increases for certain race/ethnic groups, however, a recent report analyzing the Household Pulse Survey of the United States Census Bureau, which is designed to deploy quickly and measure household experiences during the coronavirus pandemic, estimates that food insecurity has doubled overall and tripled in households with children, through the pandemic.

Various survey tools are available from the USDA to screen for food insecurity. A two-item screen to identify households at risk of food insecurity, commonly referred to as the Hunger Vital Sign has been endorsed by the American Academy of Pediatrics. In 2017, the Centers for Medicare and Medicaid Services incorporated it into the Accountable Health Communities Screening Tool. To screen positive for the Hunger Vital Sign, a survey respondent answers “often true” or “sometimes true” to either of the following questions:

- “Within the past 12 months we worried whether our food would run out before we got money to buy more.”
- “Within the past 12 months the food we bought just didn’t last and we didn’t have money to get more.”

The Special Supplemental Nutrition Program for Women, Infants and Children, known as WIC, provides federal grants to states for supplemental foods, health care referrals and nutrition education for low-income pregnant, breastfeeding and non-breastfeeding postpartum people, and to lower-income infants and children up to age 5 who are considered at nutritional risk. The Food and Nutrition Service (FNS), a federal agency of the U.S. Department of Agriculture, is responsible for administering the WIC program at the national and regional levels. The Minnesota (MN) WIC program participated in a National WIC Association survey and collected data on food insecurity among its participants to describe hunger during the COVID-19 pandemic. MN WIC found a prevalence of 41.2% household food insecurity among the 2,727 survey respondents in the year before the pandemic. This percentage increased to 49.2% during the pandemic. (Nationally, the prevalence increased from 46.4% before the pandemic to 57% during.)

MN WIC collected data using an online survey, which included the Hunger Vital Sign, to screen for food insecurity. MN WIC promoted the online survey directly to participants using the My MN WIC App. Prevalence of household food insecurity is lower in MN WIC participants when compared to the National WIC sample, but is several-fold higher than prevalence of food insecurity in the general Minnesota population.

MN WIC household food insecurity increased throughout MN during the pandemic (Figure 1). Washington, Isanti, Meeker, McLeod, Sibley and Goodhue counties reported the highest rates.

Disparities in food insecurity

The USDA Economic Research Service follows trends in food insecurity using Current Population Survey Food Security

Supplement data. USDA data reveals that Black and Hispanic households have had persistently higher prevalence rates of food insecurity when compared to White, non-Hispanic and other or multiple races, non-Hispanic groups. The Center for American Progress reports that, based on USDA data, prevalence of food insecurity among the Black, non-Hispanic population has risen sharply from 19.1% in 2019 to 21.7% in 2020. Similarly, the prevalence of food insecurity among the Hispanic population also rose from 15.6% in 2019 to 17.2% in 2020. Despite these increases, the national prevalence of food insecurity from 2019 to 2020 remained stable at 10.5%. This is attributed to the decrease in prevalence rates among the White, non-Hispanic population and the other or multiple races, non-Hispanic population in 2020.

Food insecurity and iron deficiency anemia

Iron deficiency anemia is associated with mild and moderate food insecurity in infants, toddlers and adult women. A systematic review and meta-analysis of the peer-reviewed literature on iron deficiency anemia and food insecurity found the adjusted odds of iron deficiency anemia was 1.45 times more likely compared to those from food-secure households.

Brain tissue-level iron deficiency is thought to occur before apparent anemia; in toddlers, this is known to lead to long-term neurological abnormalities, including reduced recognition memory, affect changes and unusual motor movements. Screening for iron deficiency in mother, infant and child is suggested to protect the fetus and subsequent infant brain from iron deficiency and related neurodevelopmental impairments. The American Academy of Pediatrics (AAP) recommends screening for anemia be performed with a determination of hemoglobin concentration at approximately 1 year old.

In Minnesota, WIC screens infants, children under 5 and pregnant/postpartum people for low hemoglobin. Children are screened between 9 and 12 months, at 18 months and then annually until they age

out of the program. Pregnant people are screened at their first WIC visit and re-screened at their first postpartum visit. MN WIC paused in-person clinic visits beginning March 13, 2020, and began providing clinic services using phone calls and virtual visits. This continues as of March 24, 2022, due to the COVID-19 pandemic and waivers in place. The shift to virtual visits prevents WIC from screening participants for anemia or taking weights/heights. In 2019, the prevalence of anemia in infants

and children participating in MN WIC was 13.5%, pregnancy anemia was 16.5% and postpartum anemia was 34.5%. The prevalence of anemia identified by MN WIC in 2019 varied greatly by race/ethnicity (Figure 2).

Nutrition assistance

The Supplemental Nutrition Assistance Program (SNAP), previously called the Food Stamp Program, is a county-run, state-supervised, federal Program that aims

FIGURE 1

Food insecurity in MN WIC before and during the pandemic

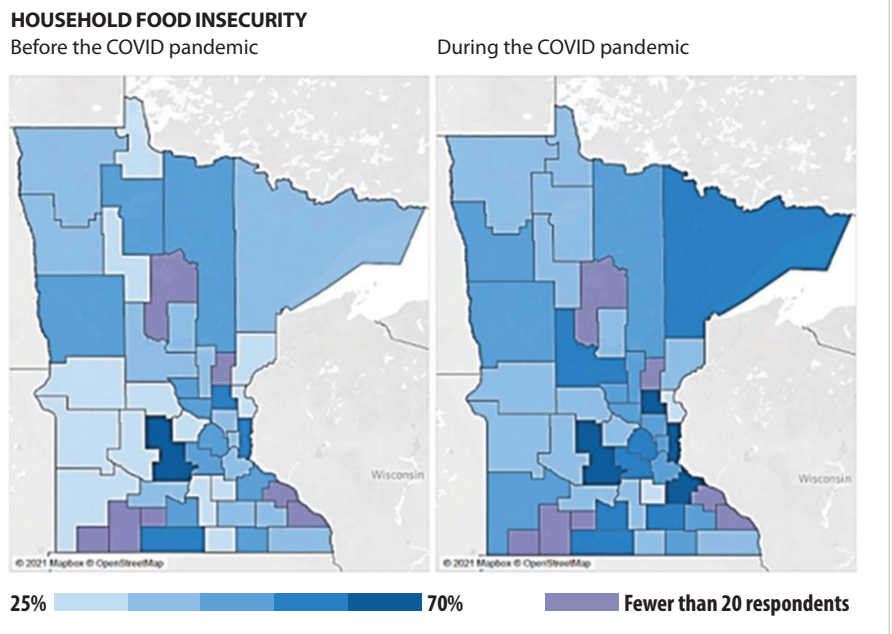
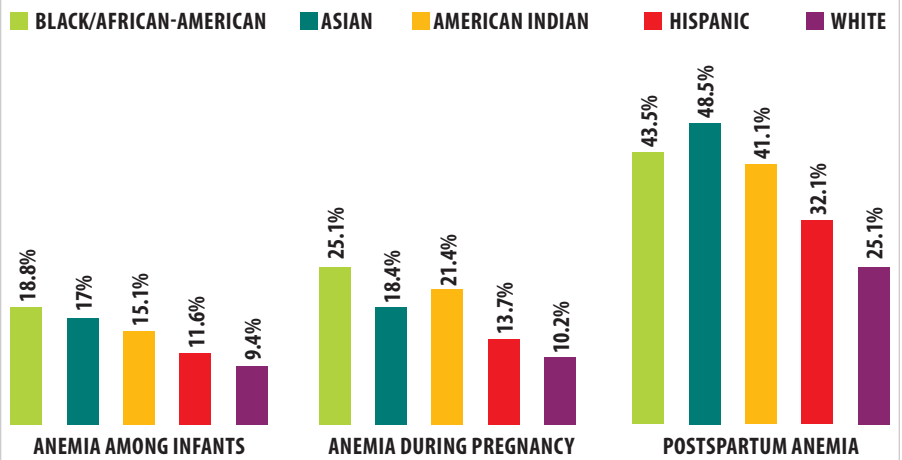


FIGURE 2

MN WIC 2019 anemia prevalence rates



at decreasing food insecurity. A 2010 report conducted by The Urban Institute under a cooperative research contract with USDA's Economic Research Service (ERS) Food and Nutrition Assistance Research Program (FANRP), based on survey data from 1996, 2001 and 2004, reported that SNAP participation reduces the likelihood of being food insecure by roughly 30% and reduces the likelihood of being very food insecure by 20%. Minnesota rates of participation show 77% of Minnesotans eligible for the federal Supplemental Nutrition Assistance Program (SNAP) were enrolled during 2018.

In 2019, an estimated 67% of those eligible for WIC in Minnesota enrolled in WIC, one of the highest coverage rates in the United States. Families qualifying for SNAP, Medical Assistance, MN Family Investment Program, Energy Assistance Program, free/reduced-price school lunch, SSI or Tax Equity and Fiscal Responsibility Act are eligible for WIC without having to provide income information.

In 2018, MN WIC responded to increasing anemia rates by initiating a nutrition education plan focused on anemia detection and follow-up. Anemia among children decreased from 14.4% in 2018 to 13.5% in 2019 and anemia during pregnancy dropped from 18.8% to 16.3%. Resolution rates for anemia also improved from 57% in 2018 to 73% in 2019.

MN WIC addresses anemia by:

- Providing a nutritious food package high in iron and vitamin C.
- Providing individualized nutrition assessments for risk of iron deficiency anemia.
- Providing education to resolve or prevent anemia.
- Encouraging breastfeeding with iron supplementation of infants exclusively breastfed.
- Introducing iron-rich foods by 6 months old.
- Promoting appropriate bottle use and weaning from the bottle by 12 to 14 months old.
- Preventing anemia during pregnancy.
- Recommending supplements before, during and after pregnancy.

- Referring participants to healthcare providers for follow-up on hemoglobin levels less than 10 mg/dl.
- Referring food-insecure families to other community programs and food resources.

MN WIC fully transitioned to electronic benefits in 2019. This allowed the program to track benefit redemption for specific foods. MN WIC notes that although formula, milk, fruits and vegetables are redeemed at high levels, only 60% of families redeemed iron-fortified, ready-to-eat cereals, 48% redeemed infant cereals and 28% redeemed infant jarred meats.

With the change to remote operation, MN WIC has additional resources on its website: <https://www.health.state.mn.us/people/wic/>. People can apply for WIC online (<https://redcap.health.state.mn.us/redcap/surveys/?s=LNKN377EPE>). To help address WIC participants' needs through the pandemic:

- WIC benefits are added remotely to enrollee's electronic benefit cards.
- Food options, including fruit and vegetable benefits, have been expanded.
- Participants can access most WIC services by phone.

Certain misconceptions hinder appropriate referral and enrollment in food assistance programs. Although a 2019 Public Charge Final Rule raised concern for ineligibility to become a lawful permanent resident if an individual had received federal benefits, according to the USDA, acquiring nutrition assistance through the FNS does not make an immigrant a "public charge." Therefore, an immigrant to the United States will not be deported, denied entry to the country, or denied permanent status because he or she receives food stamps, WIC benefits, free and reduced-price school lunches or other nutrition assistance from FNS.

Screening by providers

Given the increasing prevalence of food insecurity through the pandemic, its association with iron deficiency and the profound impact this could have on the developing brain, providers should consider routinely screening for household food insecurity in clinic. The Hunger Vital Sign is an effective

method of screening for food insecurity in a busy medical practice. Families should not have to screen positive to be offered resources to prevent food insecurity from occurring. If a provider suspects that a patient/family could benefit from nutrition assistance, they can and should refer the family to a federal food assistance program. Contact a SNAP Outreach program specialist for enrollment assistance at 651-209-7963.

Local WIC offices are available to provide nutrition education, breastfeeding support, supplemental food and key referrals to healthcare providers and community resources. MN WIC may be reached at 1-800-WIC-4030 (1-800-942-4030). Information is available on the MN WIC website (<https://www.health.state.mn.us/people/wic/>). **MM**

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Food doesn't have to go to waste

Twin Cities Food Justice

helps the environment—and individuals—by saving edible food from the trash

BY ANN HILL

Open your refrigerator and throw out a third of the food there. That is, in essence, what happens across the country every day as 30% of all food is wasted. That wasted food accounts for 21% of all garbage generated in the United States. The situation is somewhat better in Minnesota, but not enough to pat ourselves on the back and throw out last night's meatloaf.

The Minnesota Pollution Control Agency (MPCA) recently tried to measure the proportion of food in Minnesota's municipal solid waste. The MPCA analyzed a cross-section of our garbage and found that 25% of the residential and commercial mixed municipal solid waste was a category that includes food, compostable paper and packaging, liquids and non-compostable packaging from edible food. Almost half of that category was edible food. That finding was consistent across the metro area and outstate Minnesota.

Currently, food makes up 18% of landfills in Minnesota, where it breaks down and produces methane, a greenhouse gas with heat-trapping potential 25 times greater than that of carbon dioxide. Reducing food waste is a significant opportunity to mitigate climate change.

The economic impact of this waste is significant. A family of four in Minnesota could save \$1,500 each year by reducing food waste. Those savings could be put to good use in so many ways, from child care and transportation to housing.

Today, one in nine Minnesotans, including one in six children, are facing hunger.

Over the last 12 years, we have made slow but steady progress in reducing Minnesota's food insecurity rate, reaching a decade-low in recent years. The United Nations defines food insecurity as a lack of regular access to adequate safe and nutritious food necessary for normal growth and development as well as an active and healthy life. COVID-19 has reversed a decade of progress, with a record number of people now experiencing hunger in our state. In recent years, as food waste increases, so does food insecurity.

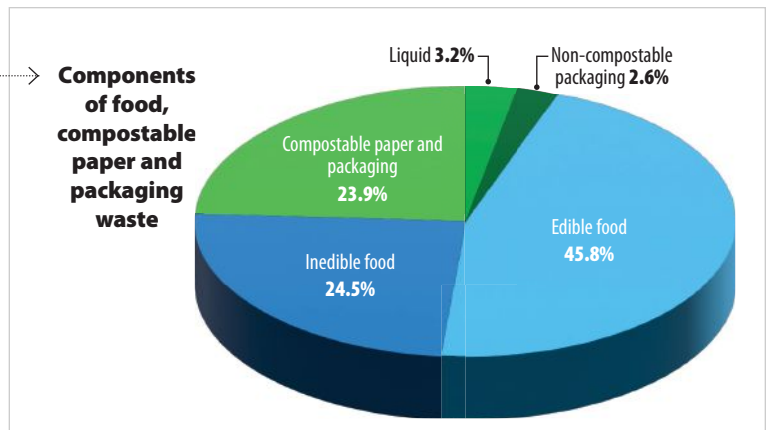
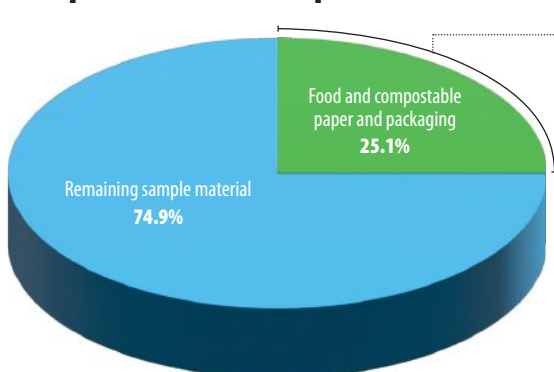
One of the most troubling impacts of the pandemic is the deepening hunger divide: Black, Hispanic, Asian and Indigenous families in Minnesota are at least twice as likely as White families to live with hunger, with new evidence suggesting this divide has grown to nearly four times the rate for Black Minnesotans in 2021.

Twin Cities Food Justice (TCFJ), founded in 2015 by five students in the Masters of Public Health program at the University of Minnesota, applies practical solutions to reduce hunger and food waste in the Twin Cities. Its work is based on four core values:

- Improving health through increased access to nutrient-rich food, especially among food-insecure individuals.
- Creating conditions for health and economic equity in the neighborhoods we serve.
- Executing our work with environmentally sustainable mechanisms.
- Engaging the Twin Cities community in the issues of food waste, food insecurity and hunger.

TCFJ recovers excess produce that grocers want to donate instead of discarding and then partners with nearby hunger-relief organizations to plan weekly drop-offs. A team of more than 50 volunteers collects, sorts and delivers the food. TCFJ serves smaller grocers and hunger relief organizations traditionally excluded from larger-scale food rescue programs. Food donors include Seward Co-op, Whole Foods, Eastside Food Co-op, Breadsmith and Fulton Farmers Market. Collections are delivered

Composition of municipal solid waste





TCFJ recovers excess produce from smaller grocers, who likely would discard it, and delivers it to hunger relief organizations traditionally excluded from larger scale food rescue programs.

to organizations like House of Charity, Soup for You, Tubman, Aeon, Simpson Housing and many food shelves. All deliveries are free of cost to donor and recipient organizations. About 15,000 pounds of food is rescued each month.

The food rescues are organized to optimize donor and recipient proximity to minimize carbon footprint. It is not unusual for volunteers to complete their shift using only a bicycle and TCFJ bike trailer.

Recently, a volunteer picked up produce from a local co-op and delivered it to a subsidized housing facility in downtown Minneapolis. One resident told the volunteer that she had not had fresh produce on a consistent basis at any time in her life. She was excited and grateful to receive the food donation, saying that her health issues, including diabetes and high blood pressure, were



Many Twin Cities Food Justice volunteers use only a bicycle and a bike trailer to deliver food—and reduce their carbon footprint.

significantly improved since she started eating fresh food delivered by TC Food Justice.

So, before you close your refrigerator door and vow never to throw that wilted lettuce away, make a commitment to do more. TCFJ is always looking for volunteers to spend an hour a week to recover and deliver food. Or consider making a donation to TCFJ for projects like purchasing a refrigerator to store fresh produce at a food shelf or community clinic. For more information about becoming involved, go to tfoodjustice.org or email executivedirector@tfoodjustice.org. MM

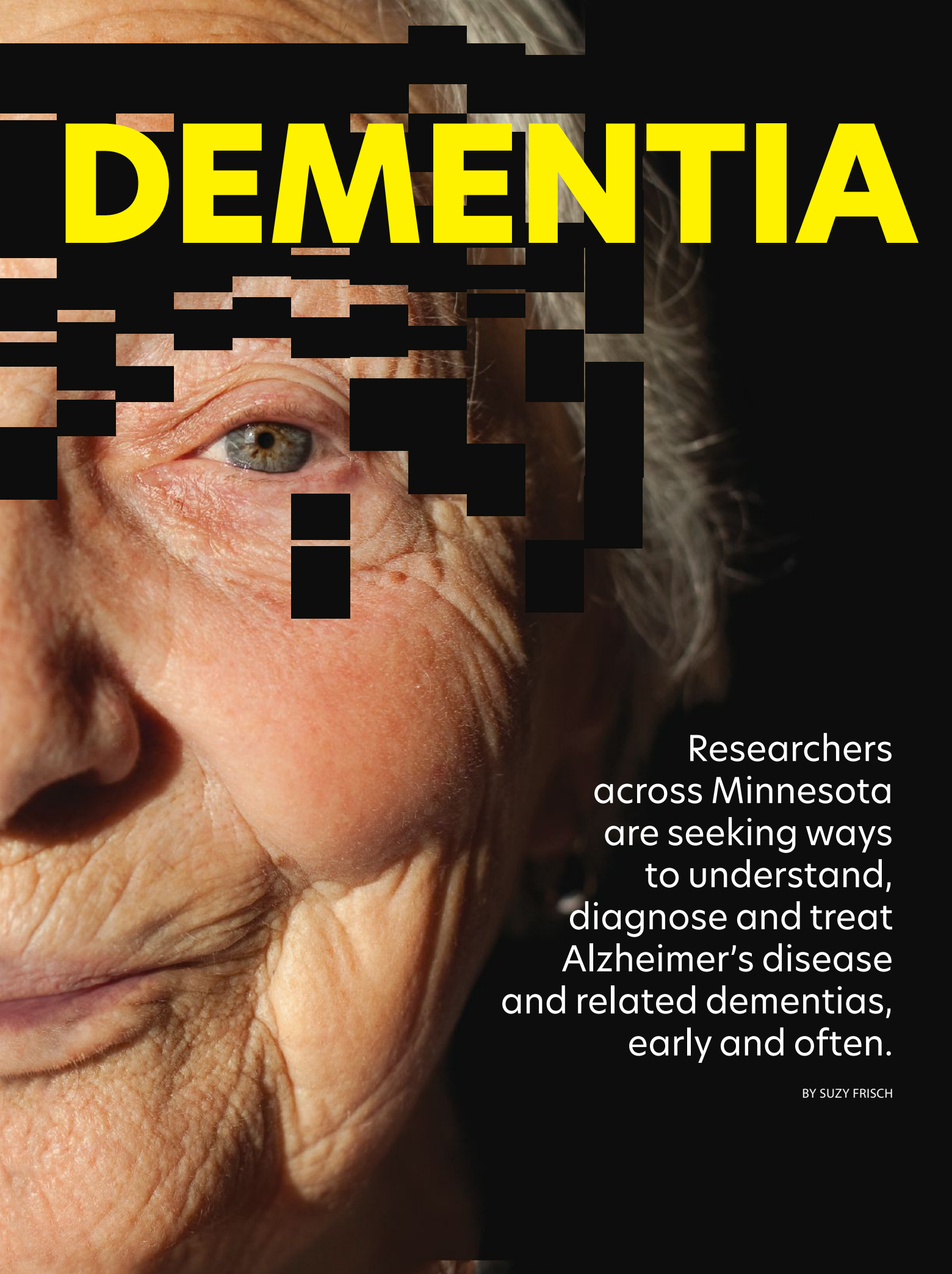
Ann Hill is executive director, Twin Cities Food Justice.

For more information

Second Harvest Heartland:
The COVID-19 Hunger Surge
<https://www.2harvest.org/who-how-we-help/the-face-of-hunger-today/the-coming-hunger-surge.html>

MN Pollution Control Agency: *2019/2020 Food Waste Generation and Composition Study Analysis*
<https://www.pca.state.mn.us/sites/default/files/w-sw1-67.pdf>





DEMENTIA

Researchers across Minnesota are seeking ways to understand, diagnose and treat Alzheimer's disease and related dementias, early and often.

BY SUZY FRISCH

RESEARCH

Digging deep on dementia

The opportunities to study Alzheimer's disease and related dementias are vast, and Minnesota researchers are central to the action. They are delving into diverse aspects of the diseases and their effect on patients, their caregivers and communities. The need for answers, predictive and diagnostic tools, therapies and supports are as pressing as ever—and mounting.

In Minnesota, 99,000 people ages 65 and older have Alzheimer's disease as of 2020, according to the Alzheimer's Association. Those numbers are projected to rise 21% to 120,000 in 2025. In the United States, more than 6 million people currently live with Alzheimer's; that population is expected to reach 13.5 million by 2050.

There are many promising avenues being explored in Minnesota and nationwide. Lisa Groom, health systems director for the Alzheimer's Association Minnesota-North Dakota chapter, points to efforts to develop blood-based biomarkers that are associated with the underlying brain changes causing dementia.

"Biomarkers are a starting point that would lead us to move on to additional testing like an MRI or PET scan or other assessments, which would determine what kind of interventions we can do to

prevent or treat Alzheimer's," Groom says. "It's exciting to look at the earlier stages of the disease so that people can be involved in their own care and make decisions about what is important to them."

Other developing areas are new classes of drugs that address the biology of dementia, taking advantage of emerging knowledge of how amyloid protein plaques and tau protein tangles form. Groom also

highlights work that identifies the role of cardiovascular health, obesity, smoking and diabetes in cognitive decline.

In addition to investigating the origins of dementia and promising ways to treat it, another important arm of Alzheimer's research focuses on caregivers,

Groom says. There are 171,000 caregivers of people with Alzheimer's disease in Minnesota who provided 156 million hours of care in 2021. That level of caregiving—and the stress that comes with it—regularly leads to mental and physical challenges. Researchers are working on the best ways to support caregivers and protect their well-being.

Dedicated teams of physicians, scientists, public health experts, psychologists and others across the state are striving to make findings of their own. Here is a look at some of their work.



In Minnesota, 99,000 people ages 65 and older have Alzheimer's disease as of 2020, according to the Alzheimer's Association. Those numbers are projected to rise 21% to 120,000 in 2025.



MAYO CLINIC

A longitudinal lens on Alzheimer's

Since 2004, a research team led by Ronald Petersen, MD, PhD, has studied 6,000 Olmsted County adults ages 30-89 in collaboration with Olmsted Medical Center. Currently, about 3,100 people without dementia are participating in the study, providing a window into the factors affecting successful aging and cognitive decline.

Participants ages 30-49 are screened every 30 months; people 50 and older are screened every 15 months. Researchers conduct an array of assessments and testing, including neurological evaluations, cognitive assessments of memory and executive function, blood draws, imaging and home studies.

"It's a very valuable study in determining the lifestyle factors that have been associated with preventing cognitive decline, including things like cardiovascular exercise and staying socially engaged. The study also helped validate new cutting-edge biomarkers associated with cognitive decline," says Jonathan Graff-Radford, MD, a neurologist and researcher at the Mayo Clinic Alzheimer's Disease Research Center and the Mayo Clinic Olmstead Study of Aging. The Study of Aging is funded mainly through the National Institutes of Health (NIH), National Institute on Aging and the GHR Foundation.

"The longer we follow people, the more we are learning. We're learning the sequence of events that happen and lead to Alzheimer's—what things change first."

- Jonathan Graff-Radford, MD

Researchers are studying whether amyloid proteins in the brain or blood predict who is going to develop cognitive issues in the future and over what length of time. They also are examining how the brain changes in the presence of amyloid over time. "The longer we follow people, the more we are learning," Graff-Radford says. "We're learning the sequence of events that happen and lead to Alzheimer's—what things change first."

Through such inquiries, the researchers have learned that amyloid can be detected decades before people develop cognitive issues and that tau develops up to 10 years before. Other findings show that factors like diabetes, smoking, vascular conditions and hypertension contribute to the aging process. If they are controlled, aging may be slowed.

Identifying the roles of amyloid and tau in Alzheimer's disease—rather than cognitive symptoms alone—contributed to a new, common definition of the condition and a framework for researchers. The new definition helps researchers diagnose Alzheimer's disease biologically even before people develop symptoms and to develop treatments that prevent symptoms. This is similar to giving statins for hyperlipidemia to an asymptomatic person instead of waiting to provide treatment until they have a

stroke or heart attack, says Clifford Jack Jr., MD, a Mayo Clinic radiologist and Alzheimer's researcher.

Researchers also are working to identify the most promising blood markers for measuring the presence of Alzheimer's changes in the brain. They are testing several candidates and evaluating which test best predicts who will experience cognitive decline, Graff-Radford says.

A treasure trove of other research is occurring through the Study of Aging. Some focus areas include using cerebrospinal fluid to measure amyloid and tau metabolites, PET imaging of such proteins, the neuropathology of frontotemporal degeneration, genetic predictors of Alzheimer's and other neurodegenerative conditions and characterizing the development of mild cognitive impairment.

AHEAD trial: Aiming to remove amyloid before dementia sets in

There is strong evidence that amyloid protein buildup in the brain plays a role in the memory problems associated with dementia. Mayo Clinic researchers are conducting a clinical trial of a medication that removes amyloid protein in people ages 55-80 before they develop dementia symptoms.

The phase III trial tests lecanemab, an amyloid antibody drug, to see if removing amyloid delays the onset of cognitive symptoms, says Graff-Radford, who is the site principal investigator on this trial. Participants are at risk of developing Alzheimer's disease because of a family history or other risk factors. A PET scan determines if they are eligible for the study by revealing if they have started developing amyloid plaques.

In Rochester, about 20 people will be enrolled in the trial, expected to last four years. Participants will receive infusions of the drug or a placebo. Then they will undergo testing of their memory and cognitive abilities to see whether the medication slowed the progression of cognitive impairment.

Another aspect of the project is developing potential systems for screening people who are at risk of developing Alzheimer's disease. During this clinical trial, researchers screen potential participants with a blood test before the PET scan. They will analyze data to see if protein levels detected in blood tests can identify who should continue on for brain imaging.

"If blood tests prove to be accurate, that could be something that is eventually used in a primary care office to identify people at risk," Graff-Radford says. "If it looks like their protein levels warrant future evaluation, then they can go to a specialist to do a PET scan and confirm it."

Mayo Clinic researchers are conducting a clinical trial of a medication that removes amyloid protein in people ages 55-80 before they develop dementia symptoms.

Senolytics for Alzheimer's disease

A fruitful area of research lately has focused on the role of senescent cells in dementia. These cells have stopped dividing and linger, leading to inflammation, organ decline and overall aging.

A fruitful area of research lately has focused on the role of senescent cells in dementia. These cells have stopped dividing and linger, leading to inflammation, organ decline and overall aging.

They also are associated with age-related conditions like dementia, cancer and cardiovascular disease. The first senolytic agents, drugs that selectively eliminate senescent cells, were discovered at Mayo. James Kirkland, MD, PhD, director of Mayo Clinic's Robert and Arlene Kogod Center on Aging and a geriatrician at Mayo Clinic who researches senescence, with neurologist Vijay Ramanan, MD, PhD, is running a clinical trial to test

whether a combination of two senolytic drugs, dasatinib and quercetin, slows the progression of dementia by removing troublesome senescent cells.

The pilot study with 15 participants ages 55 and older launched in 2022. It focuses on people who have symptoms of mild cognitive impairment or Alzheimer's disease, including memory and other cognitive problems. Researchers are monitoring how patients fare cognitively while taking dasatinib and quercetin, a cocktail that eliminates senescent cells. They also will evaluate whether targeting the aging process with these medications slows the development of dementia and if the drugs engage with the designated biomarkers.

"It's an earlier-phase study but we're excited about it because it's a homegrown study and we're targeting a very novel mechanism," Graff-Radford says.

Alzheimer's Disease Research Center

The Mayo Clinic Alzheimer's Disease Research Center, directed by Petersen, is another rich source of clinical work focusing on Alzheimer's disease and related dementias. It's one of 37 centers funded by the National Institute on Aging to better understand these diseases, determine the best ways to detect them early and develop new therapies.

Originally focused on characterizing normal aging and mild cognitive impairment, the center has branched out into investigating other diseases such as frontotemporal lobar degeneration, vascular dementia and Lewy Body dementia, the second most common type of dementia. Investigators are exploring how these dementias compare to Alzheimer's so that clinicians can more quickly and effectively make the correct diagnosis and offer corresponding treatment, Graff-Radford says.

Lewy Body dementia

Neurologist Bradley Boeve, MD, and radiologist Kejal Kantarci, MD, are engaged in a longitudinal observational study of 90 people with Lewy Body dementia. People with Lewy Body dementia develop many of the symptoms and brain pathologies of Alzheimer's and Parkinson's diseases. The researchers seek to identify neuroimaging characteristics that are specific to Lewy Body dementia.

Kantarci and Boeve are working to identify brain-imaging biomarkers and blood-based biomarkers, along with genetic and clinical profiles, to develop novel tests for diagnosing Lewy Body dementia, Graff-Radford says. The data also will be used to track disease progression and develop new therapies. To develop a screening test for Lewy Body dementia, study participants have structural MRIs that measure brain volume, PET studies that measure amyloid and tau deposition (since many patients with Lewy body dementia have coexisting Alzheimer's disease pathology), a SPECT scan that measures dopamine functioning, as well as fluids such as blood and cerebrospinal fluid. Researchers track participants' cognitive, motor, sleep, behavioral, neuropsychiatric and imaging measures.

The role of sleep disorders in Lewy Body dementia

The majority of people with Lewy Body dementia first develop REM sleep behavior disorder before they present with other symptoms. Signs of the sleep disorder, such as talking during sleep, falling out of bed and acting out movements during dreams, usually begins years or even decades before Lewy Body dementia develops, Graff-Radford says.

Boeve, a sleep medicine physician who specializes in REM sleep behavior disorder, is co-leading a multicenter team that received \$35.1 million from the National Institute on Aging and the National Institute of Neurological Disorders and Stroke for a five-year study that started in 2022. Investigators are collecting imaging, blood and sleep markers from 430 people with the REM disorder and 60 people without it. They will explore what biological factors can be identified in people who develop Lewy Body dementia.

"This is an exciting new study because we're capturing these very early changes [in the brain]. It will be a great group of people to eventually do therapeutic intervention with because they have the sleep disorder, but they don't have other symptoms of Lewy Body dementia yet," Graff-Radford says. "We will be able to de-

Investigators are collecting imaging, blood and sleep markers from 430 people with the REM disorder and 60 people without it. They will explore what biological factors can be identified in people who develop Lewy Body dementia.

termine where they are in terms of risk and be able to power clinical trials with this group.”

Frontotemporal Lobar Degeneration (FTLD)

A cluster of neurodegenerative disorders usually affecting people in their 40s to 60s originate in the frontal and temporal lobes, affecting memory, behavior and language. Ten to 20% of dementia cases in the United States stem from frontotemporal lobar degeneration (FTLD). Boeve is the co-principal investigator working in

partnership with the University of California, San Francisco, to gain a deeper understanding of these diseases and develop treatments. Currently, there are no approved treatments for FTLD.

Researchers are running a five-year, multicenter initiative that received \$63 million in NIH funding. They aim to identify the best clinical measurements and biomarkers for people living with these conditions, which are some of the most understudied dementias, Graff-Radford says. The team seeks to discover how and why these diseases develop by collecting comprehensive cognitive, functional and imaging data, plus cerebrospinal fluid.

FTLDs often have a genetic

component, giving researchers the opportunity to compare cases with familial genetic mutations to those that are sporadic. An important goal is to eventually intervene with therapies in those who have a genetic mutation but do not have any FTLD symptoms yet, in the hope that symptoms can be delayed or prevented. People with frontotemporal dementias have very different symptoms than those with Alzheimer’s, such as language and personality changes. Another research goal of this line of work includes determining the best ways to study the various components of FTLD, Graff-Radford says. Methodologies used in Alzheimer’s research don’t always work for these conditions.

Vascular contributions to cognitive impairment

Diseases affecting the brain’s blood vessels have shown to be major contributors to cognitive impairment. People with uncontrolled high blood pressure, high cholesterol, diabetes and stroke are at high risk of cognitive impairment due to vascular disease. Mayo belongs to two NIH-funded consortia that study vascular contributions to cognitive impairment (VCID), which can overlap

with other dementias and typically causes people to have slower processing speeds and issues with executive function tasks like planning, sequencing and multitasking, Graff-Radford says. Clinical trials aiming to discover ways to prevent these diseases from emerging or progressing have been impeded by a lack of identifying biomarkers. Biomarkers found through blood testing would help define which disease pathways to target and allow researchers to assess whether a treatment is effective.

Mayo is part of the MarkVCID study, which is working to develop and test cognitive measures and biomarkers that could be used to diagnose VCID. About 120 people from Rochester will participate during the five-year observational study, led by Petersen and Prashanthi Vemuri, PhD. This study aims to provide biomarkers that can be used in clinical trials.

In another VCID study, researchers from Mayo and Massachusetts General Hospital are running a multicenter study to investigate the relationship between stroke and dementia. It is established that people who experienced a stroke have a higher chance of developing dementia. This research will collect cognitive, imaging and blood work data from people who have had a stroke, aiming to determine who is likely to develop dementia. The five-year study started in 2021 and at Mayo is led by Vemuri, Petersen and Graff-Radford. It involves studying the change in cognition in 8,000 participants at sites nationwide. Researchers aim to gain a deeper understanding of the disease progression in hopes of finding ways to prevent vascular dementia from developing after a stroke.

Deploying artificial intelligence

A research team composed of Mayo Clinic neurologists, data scientists, artificial intelligence (AI) experts and software engineers, led by David Jones, MD, is collaborating to bring innovative AI technology to dementia research and clinical care. In one project, led by neurologist Hugo Botha, MBChB, the Mayo AI team is collaborating with Google to create technology to analyze language and speech as an indicator of neurodegenerative disease and other neurologic conditions. The technology would study changes in speech and language to reveal what neurodegenerative condition is occurring. The Mayo AI team is testing the use of AI to interpret brain imaging scans, aiming to discover information that is not visible to the human eye. Such discoveries could be used to diagnose these conditions earlier and more easily with high ac-

FTLDs often have a genetic component, giving researchers the opportunity to compare cases with familial genetic mutations to those that are sporadic. An important goal is to eventually intervene with therapies in those who have a genetic mutation but do not have any FTLD symptoms yet, in the hope that symptoms can be delayed or prevented.

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curacy. These technologies are also being used to analyze subtle patterns in the way people walk to reveal information about the functioning of their nervous system and predict and monitor the development of the symptoms of Parkinson's disease and other neurologic problems with movement.

Atypical Alzheimer's

Most people associate Alzheimer's disease with memory loss, but there are other changes that can signal that the disease or other dementias are developing. Neurologist Keith Josephs, MD, and neuroradiologist Jennifer Whitwell, PhD, have been collaborating since 2010 on research that investigates the sensory motor and language changes that affect about 25% of people with Alzheimer's disease.

Their longitudinal study involves tracking more than 100 people annually over a decade to follow their disease progression compared to typical Alzheimer's. They are using cognitive testing and molecular and structural imaging to study the levels of

amyloid and tau proteins in the brains of people with logopenic aphasia, corticobasal syndrome or posterior cortical atrophy. They also are assessing the utility of blood-based biomarkers and genetic underpinnings in these dementias. Ultimately, Whitwell and Josephs seek to develop better and more accurate tools for earlier diagnosis of Alzheimer's in patients with visual, sensory motor and language difficulties. This could both improve treatment and provide models for other researchers to conduct clinical trials focused on these conditions, Graff-Radford says.

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UNIVERSITY OF MINNESOTA

Unlocking the mysteries of aging

To date, treatments for Alzheimer's disease generally target its signature plaques and tangles. As scientists discovered the role of senescent cells in aging, they have found a potential new way to approach treating the disease.

Laura Niedernhofer, MD, PhD, director of the University of Minnesota Medical School Institute on the Biology of Aging and

Laura Niedernhofer, MD, PhD, is developing ways to proactively kill off the senescent cells that promote inflammation, chronic disease and overall aging.

Metabolism, is developing ways to proactively kill off the senescent cells that promote inflammation, chronic disease and overall aging. Niedernhofer, along with Mayo Clinic collaborators, has contributed to the undertaking of a proof-of-concept study since 2019 that focuses on Alzheimer's disease. They are investigating whether the senolytic cocktail of dasatinib and quercetin can

reach the brain, potentially paving the way for future studies that evaluate whether this drug combination is effective for treating Alzheimer's disease.

The director of the Medical School's Discovery Team on the Biology of Aging, Niedernhofer has another project that aims to understand what factors contribute to the good health of centenarians who are largely resistant to Alzheimer's disease. She has

been working to analyze genetic information from centenarians. Her team's findings ultimately could be used to develop therapeutics that promote healthy aging, even in populations predisposed to chronic disease or dementia.

Niedernhofer's research involves engineering mice to age rapidly, with the ability to focus on one organ or one cell type at a time. This allows researchers to introduce Alzheimer's-like pathology into aged mice to see how an old body contributes to Alzheimer's progression. Conversely, they can see if centenarian genes protect from the disease, Niedernhofer says. Her team also is investigating whether dementia results from aged neurons, an aged immune system or aging support cells in the brain.

Developing good biomarkers that indicate whether someone is aging well—or not—through blood or saliva testing is critical and a big component of research at the University, Niedernhofer says. Numerous clinical trials also focus on the fundamental mechanics of aging, changes in metabolism, senescence and more, which could lead to breakthroughs in dementia research. She adds, "There are so many clinical trials going on that I'm very optimistic that we'll get answers in the next three years, including the Alzheimer's study, and it will open the floodgates of opportunities."

Diving into the mechanics of neurodegenerative disease

How do neurons die in people with Alzheimer's disease? And how can the death of these neurons be prevented? These are the fundamental questions that guide the research of Michael Lee, PhD, a neuroscience professor at the University of Minnesota Medical School.

Alzheimer's disease often begins developing 20 to 30 years before a patient is diagnosed. Lee has several research projects that seek to identify which pathologies drive the progression of neuro-

degenerative diseases, including Alzheimer's, Parkinson's disease and Lewy Body dementia, after they start developing.

"There is a view now that even though some of the early pathologies associated with Alzheimer's, like amyloid and tau, initi-

How do neurons die in people with Alzheimer's disease? And how can the death of these neurons be prevented?.

ate the disease process, the actual progression of the pathology and symptoms might be occurring independently of the initial pathology," Lee says. "It's clear that some of these early changes in the brain that people are studying might not be relevant for therapeutic intervention because the disease process is maintained by something that is independent of another initiating process."

In one study in conjunction with Mayo Clinic, researchers are testing novel oral compounds that could be neuroprotective. The study, Neuroprotective Therapies for Alzheimer's Disease, focuses on two targets: the enzyme AMP-activated protein kinase (AMPK) and glutathione, an antioxidant that is important for neuroprotective pathways. The compounds target one enzyme or molecule but can activate multiple neural pathways at once, testing whether they slow or stop the progression of Alzheimer's. The study is producing promising results in mouse models, Lee says, with the goal of progressing to human clinical trials.

Lee also partners with Michael Farrar, PhD, an immunology professor, on testing whether modulating regulatory T-cells in the peripheral immune system has an impact on Alzheimer's pathology. Other research has shown that people with Alzheimer's tend to have dysfunctional immune cells away from the brain in the periphery. The team is testing the hypothesis that dysfunction of the regulatory T-cells leads to a hyperinflammatory state in the brain, which is associated with memory deficits.

The team uses mouse models to test whether regulatory T-cells circulating in the blood can be used to increase or decrease the immune system response. They seek to learn how these T-cells affect the development of Alzheimer's pathology in the brain.

Adult Aging Brain Connectome study: Learning how individuals' brains change over time

Seeking to determine why some people develop dementia while others don't, researchers at the University of Minnesota are using ultra-high-powered MRI scans to study the brains of people 35 and older over time. The initiative is the second phase of the NIH Human Connectome Project that launched in 2010 to map the neural pathways underpinning the structural and functional connectivity of the human brain.

In a partnership between the University of Minnesota's Center for Magnetic Resonance Research (CMRR) and Washington University, investigators mapped the human brain circuitry in 1,200 healthy adults. They paired noninvasive scans from 3- and

7-Tesla MRIs with health and behavioral screenings that put the neuroimaging in context. By taking advantage of machine learning and artificial intelligence to capture relationships among scans, screenings and cognitive trajectories, the team can explore why people ultimately experience dementia, says Melissa Terpstra, PhD, a former Minnesota professor who recently became director of NextGen Imaging and a radiology professor at the University of Missouri School of Medicine.

The Adult Aging Brain Connectome study, which was recently funded by a \$33.1 million grant from the National Institute on Aging, will allow accumulating brain imaging data from participants over a period of more than a decade. "Some people, unfortunately, will develop dementia, and then we can go back in time to look at their imaging data and see what it tells us," Terpstra says. "I'm very excited about the impact the research can make on why people get dementia. Ideally, we may be able to find markers that predict how people progress." They have teamed up with David Jones, MD, a Mayo Clinic dementia specialist with expertise in measuring brain networks in patients, to develop robust connectome-based biomarkers of Alzheimer's disease.

The research team will continue following and collecting data from 1,000 people over the next five years, including 300 in Minnesota. The current work is benefitting from imaging tools developed on 7-Tesla MRI scanners at the CMRR to create high-quality images of people's brains, says Essa Yacoub, PhD, a CMRR professor of radiology and medical physics. Compared to 3-Tesla MRI, 7-Tesla images better capture the wiring of the brain and how different regions of the brain work together.

By developing and fine-tuning the methods needed to do imaging at such high magnetic fields, the CMRR team was able to more clearly reveal the brain's anatomical and functional connections and then disseminate the imaging tools to the large community of investigators using more standard 3-Tesla scanners, Yacoub says.

Terpstra studies brain chemistry, especially chemicals that are associated with neuronal health. They are notoriously hard to see. The 7-Tesla MRI helped her develop a clearer correlation between an antioxidant profile, the cognitive state and overall brain health. Further research could reveal that these antioxidants or individual chemicals are more present in the brain when amyloid plaques or tau tangles are developing. Such knowledge could be applied to better understand dementia, predict the development of the disease, monitor its progression or improve treatment, she says.

Researchers now are conducting additional imaging of existing participants while also following a new group of subjects. They

Seeking to determine why some people develop dementia while others don't, researchers at the University of Minnesota are using ultra-high-powered MRI scans to study the brains of people 35 and older over time.

will collect multiple scans over the next five years in order to monitor how the brain changes over time. Participants also undergo cognitive testing and provide blood samples that can be analyzed for molecular signs of Alzheimer's disease, inflammation, genetic risks or protective factors and other biological processes.

Studying adults of all ages longitudinally will help researchers begin to identify what factors make people resilient to developing dementia, Terpstra says. In addition, the research will delve into three other areas: the role of stress and inflammation in young adults' brains, the role of lifestyle factors such as exercise in mid-adulthood and the role of hormonal changes from menopause on brain function and structure.

A central part of the research, Yacoub says, is the publicly shared database of image data created from the Connectome projects, including a significant body of high-quality brain scans of young, healthy adults. This will open doors for other researchers to test their hypotheses about the aging brain.

The role of failed synapses in dementia

Karen Ashe, MD, PhD, a neurology professor at the University of Minnesota Medical School, has been researching the biological basis of memory loss in dementia for more than 30 years. Her current work focuses on understanding how synapses fail and

how this loss of connection between neurons eventually leads to memory loss. One recent discovery found that blocking the enzyme caspase-2 prevents synapses from failing and repairs those that already have failed. Utilizing this information, Ashe's next step involves developing a drug to inhibit caspase-2 and fortify damaged synapses, potentially helping people recover lost memories.

Ashe and a team of medicinal chemists, biophysicists, neurophysiologists, neuroanatomists, behavioral pharmacologists, biochemists and cell biologists recently formed the company Myriel to accelerate the development of a caspase-2 inhibitor. Working collaboratively with the University, the team developed a prototype that works in neurons growing in a dish. Next, they aim to create analogues that cross into the brain, which could lead to animal testing and then clinical trials, Ashe says.

The next step for Karen Ashe, MD, PhD involves developing a drug to inhibit caspase-2 and fortify damaged synapses, potentially helping people recover lost memories.

Memory Keepers Medical Discovery Team

In many Indigenous cultures, elders are essential to preserving the essence of their heritage through stories, song and sacred medicine. Yet, Indigenous people and rural residents face higher risks of dementia, putting these cultural foundations at risk. With this lens, the Memory Keepers Medical Discovery Team at the University of Minnesota Medical School Duluth Campus, is

working to address brain health equity in rural and Indigenous populations by concentrating on brain health and aging research.

As of this summer, the Memory Keepers team will have four full-time faculty members and 20 staff members supporting a broad swath of research. Many bring deep knowledge of Minnesota's rural and Indigenous communities, including people based in Red Lake, McIntosh, Two Harbors, White Earth Nation and Grand Portage. In addition, researchers work with two advisory councils, one for rural research and another for Indigenous research that includes members from the state's 11 tribal nations.

Memory Keepers uses a community-based participatory research model, relying on the councils and community members to provide advice about research priorities, how to make research work in the communities and to assist with partnerships with people and organizations that will be involved in the research, says Kristen Jacklin, PhD, a medical anthropologist and executive director of the Memory Keepers Medical Discovery Team.

"We want to bring local knowledge to the research and transform the landscape of research to improve brain health outcomes for rural and Indigenous populations here," Jacklin says. "There is a disparity and we're trying to understand it and work with communities to discover and implement solutions."

Some of the disparities rural and Indigenous residents face include risk factors for dementia like higher rates of diabetes, high blood pressure and smoking, Jacklin says. This is coupled with fewer supports in place when chronic illnesses develop.

Jacklin leads several research programs, including the Center for Community Engaged Rural Dementia and Alzheimer's Research (CERDER) and the Indigenous Cultural Understandings of Alzheimer's Disease and Related Dementias-Research and Exchange (ICARE). A 2018 NIH grant helped the team get its research off the ground in Minnesota and Wisconsin, and the team secured a second round of funding in 2021 for another five years.

Jacklin describes the work as ethnographic. Researchers seek to understand the experience of people with dementia and their caregivers, including scientific and clinical perspectives, as well as people's trajectories from mild cognitive impairment to more developed stages of dementia.

"We're very interested in how people are understanding dementia and engaging in their community and with healthcare and their families throughout the whole disease sequence and how the needs shift for families over time," Jacklin says. "A lot of our work has to do with understanding cultural differences and the systems

The Memory Keepers Medical Discovery Team at the University of Minnesota Medical School, Duluth Campus, is working to address health equity in rural and indigenous populations by concentrating on brain health and aging research.

that have developed naturally in rural and Indigenous communities. How can we build on that as a strength to provide better care for people in rural and Indigenous communities?”

The Memory Keepers team also seeks to understand Indigenous knowledge of dementia, perspectives on the illness and approaches to caring for relatives with dementia. Eventually, researchers will work to develop the American Indigenous Cognitive Assessment, a culturally specific screening tool that could be used across the country.

Wayne Warry, PhD, a medical anthropologist and director of rural health initiatives on the Memory Keepers team, conducts qualitative research on perceptions and experiences with dementia in rural Minnesota, in order to gather pilot data for grant proposals. The team is interviewing family medicine physicians, other health professionals, healthy older adults, caregivers and people with dementia. This work is part of a body of research that aims to develop a picture of what dementia looks like across the state, with an in-depth focus on northern Minnesota.

“We are seeking foundational information about people’s lived experience with dementia in rural areas,” Warry says. “We want to know how people think about dementia, what prevents them from getting tested early to identify memory problems or cognitive decline and then issues around living well with dementia, living at home and living independently.”

Jordan P. Lewis, PhD, MSW, (Aleut, Native Village of Naknek), associate director of the Memory Keepers team and a professor in the Department of Family Medicine and BioBehavioral Health, came to Minnesota in 2020 from Alaska. He studied Alaskan healthcare providers and Alaska Native caregivers’ understandings of dementia. Lewis is expanding this work with the White Earth Nation in Minnesota, seeking to learn about the needs of people who are caring for relatives with dementia. He also is working to culturally adapt the Savvy Caregiver Program to focus on dementia in Indigenous communities, where people often lack a support system of other caregivers.

Lewis is writing an NIH/NIA grant to conduct qualitative and quantitative research with current American Indian caregivers of the White Earth Nation to adapt the Savvy Caregiver Program and test the feasibility in a randomized controlled trial of the adapted Savvy Caregiver Peer Program. He plans to adapt the Savvy Caregiver Program as a caregiver peer-mentoring program that pairs current American Indian dementia caregivers with former American Indian caregivers who provide support and training as mentors. Lewis will study the impacts on current caregivers’ mastery skills, on depression and isolation and on mentoring others on their feelings of generativity and quality of life.

Long-term care for people with Alzheimer’s disease

Long-term care and its effect on patients and their caregivers are vital sources of study because the United States has 16 million family members caring for people with dementia—a number that is only growing, says Joe Gaugler, PhD, Robert L. Kane Endowed

Chair in Long-Term Care and Aging and director of the Center for Healthy Aging and Innovation at the University of Minnesota.

Gaugler leads several studies through the Families and Long Term Care Projects. The Projects emphasize designing, testing, evaluating and disseminating innovations in long-term care for people with dementia and other chronic conditions.

Adult Day Service Plus

One project assesses a model called Adult Day Service Plus that provides family support to caregivers while their relatives utilize day programs. More than

50 adult day service providers and 200 family caregivers nationwide are participating in the study. It evaluates the effectiveness and cost benefit of providing direct, evidence-based psychosocial and educational services and support to people who care for adult relatives with dementia. During the five-year study, researchers followed caregivers and people living with dementia over one year to determine if it’s an effective, scalable way to deliver care to the caregivers.

Adult Day Service Plus provides family support to caregivers while their relatives utilize day programs.

Residential Care Transition Module

Another five-year project, the Residential Care Transition Module, is wrapping up after assessing a counseling program for caregivers whose loved ones recently entered long-term care. Researchers followed 240 people during the first year after their relative entered assisted living, memory care or a nursing home. They received six formal counseling sessions during a four-month period. The team is now evaluating how this intervention helped caregivers adjust compared to those who didn’t receive the counseling, Gaugler says.

Porchlight Project

In the Porchlight Project, researchers from the University are partnering with Lutheran Social Services of Minnesota to assess a statewide volunteer program that helps people with dementia and their caregivers. The NIH-funded, stage III trial evaluates the effectiveness of providing training in dementia care to about 170 volunteers, including seven online training sessions and monthly coaching sessions.

The volunteers, in turn, support people with dementia who are living at home and/or provide respite and relief to family caregivers. The model is based on recommendations from the National Alzheimer’s Project Act and the National Research Summits on Care, Services, and Supports for Persons with Dementia and their Caregivers to create scalable, sustainable community-based support for people with Alzheimer’s and related dementias. Objectives of the training include helping people with dementia live at

home as long as possible, while also improving the competency of volunteers and caregivers' well-being, Gaugler says.

Dementia care and caregiving in the African immigrant community

Aiming to improve community health related to dementia, Manka Nkimbeng, PhD, MPH, BSN, teamed with the nonprofit African Career Education and Resources (ACER) to gain an understanding of dementia-related needs and resources in the African immigrant community. Nkimbeng, an assistant professor in the School of Public Health Division of Health Policy and Management, has been using a community-based participatory research model since 2019 to discover the beliefs and knowledge of dementia in the community. Ultimately, she aims to develop culturally informed education and other resources to improve care.

Nkimbeng's team started with the African Immigrant Memory Loss project, involving School of Public Health researchers, ACER and a 20-member community advisory board of relatives, caregivers and leaders. It was funded by the University's Program

in Health Disparities. Now her work continues with the African Immigrant Dementia Education project.

The team is using knowledge gained from community conversations and surveys from the African Immigrant Memory Loss project—such as what education and support family members require—to create curricula and programs that are adapted to African immigrant culture. It's no small feat because African cultures vary widely, Nkimbeng says, but researchers believe they can develop resources that are tailored to the community;

Manka Nkimbeng, PhD, MPH, BSN, has been using a community-based participatory research model since 2019 to discover the beliefs and knowledge of dementia in the community. Ultimately, she aims to develop culturally informed education and other resources to improve care.

eventually they could be adapted for other health conditions like diabetes or cancer.

Improving the lives of bereaved caregivers

Caregivers often pour years of their lives into supporting family members with dementia. After their relative dies, what is the best way to support them and help the transition to their new lives? Social psychologist Zachary Baker, PhD, a post-doctoral associate in the Division of Health Policy and Management in the School of Public Health, has been studying ways to improve the lives of bereaved caregivers.

Many caregivers experience depression, loneliness and a loss of physical function and personal growth after the death of their

loved one. About 25% experience prolonged or exacerbated grief, Baker says. He is principal investigator on two NIH-funded research projects. One involves modeling the experiences of several hundred former caregivers, then developing and implementing interventions to improve their lives.

In the second study, Baker focuses on caregivers who are African American or immigrants from Africa and the Caribbean. He is researching their experiences with caring for a relative with dementia to determine the best ways to fulfill their needs after their family member dies. Baker says, "We want to know: what are their experiences and how are people meeting their needs now? What are their unmet needs? And if there aren't unmet needs, what can we learn from you and what can we share with others?"

Building our Largest Dementia Infrastructure (BOLD) Center

The CDC provides funding for Alzheimer's research and public health initiatives through a program called Building our Largest Dementia BOLD Infrastructure. The University of Minnesota and the Minnesota Department of Health (MDH) are engaged in dementia-related efforts through BOLD funding.

The University is a BOLD Public Health Center of Excellence on Dementia Caregiving, one of three CDC-funded centers nationwide. The other two BOLD centers focus on the early detection and prevention of Alzheimer's. The BOLD center in Minnesota strives to elevate dementia and caregivers' challenges as a public health concern, Gaugler says.

In partnership with local, state and tribal public health offices, the center works to disseminate information and evidence-based tools and resources that support people with dementia and their caregivers. It also facilitates collaborations among public health agencies, service organizations, nonprofits, healthcare providers and others who serve caregivers and people living with dementia.

"One of the biggest gaps for improvement is continuing to identify services and supports that are more effective for different types of families and people caring for those with dementia," Gaugler says. "When evidence-based supports are identified, then it's about discovering ways to scale up in the community so everyone can access them, and coming up with viable financing strategies so families and people with dementia can pay for community-based services and supports."

BOLD funding also provides resources to the Minnesota Department of Health to build capacity to address Alzheimer's disease and related dementias. MDH has been working to build dementia-focused partnerships and public health initiatives that promote

In partnership with local, state and tribal public health offices, the center works to disseminate information and evidence-based tools and resources that support people with dementia and their caregivers.

brain health among high-risk populations. Previously, the state did not have a specific unit focused on Alzheimer's disease and related dementias, says Patricia Takawira, an MDH community health planner who coordinates the BOLD grant.

MDH's three-year BOLD grant, funded in 2020, helped MDH launch the Minnesota Healthy Brain Partnership. It brings together a host of partners, including the Alzheimer's Association, the University's Center for Healthy Aging and Innovation, dementia care providers, organizations focused on caregiver support, volunteer entities and more. The partnership is determining how to better coordinate public awareness efforts and work with health systems, Takawira says.

Other research from the University of Minnesota includes:

EARLY DETECTION. A research team in the Center for Drug Design (CDD) at the College of Pharmacy is working with RetiSpec, a Canadian medical imaging company, to develop and bring to market University of Minnesota–licensed technology that could be used for the early detection of Alzheimer's disease. Led by CDD Director Robert Vince, PhD; Swati More, PhD, associate professor; and James Beach, PhD, adjunct research professor, the team began its research a decade ago. Researchers sought to develop the use of retinal imaging to study biochemical changes in the brains of mice with Alzheimer's disease. They confirmed the technology in pre-clinical studies and pilot study in humans by noninvasively scanning patients' eyes to detect small aggregates of the beta amyloid protein before it forms into large clusters. Now they are involved in conducting a large-scale clinical trial at nine sites.

LINKS BETWEEN ALZHEIMER'S DISEASE AND LIPID METABOLISM. Ling Li, PhD, VFW Endowed Chair in Pharmacotherapy for the Elderly and associate head of the Department of Experimental and Clinical Pharmacology, focuses on the connection between Alzheimer's disease and cardiovascular/cerebrovascular diseases. A pathologist and molecular, cellular and developmental biologist/neurobiologist, Li has developed multiple research programs since 2000 that investigate the pathogenic and therapeutic connections between lipid metabolism and Alzheimer's disease. Her current research is in the preclinical animal testing phase. Li uses genetically modified mouse models to explore the role of cholesterol and lipoprotein-related pathways in Alzheimer's, cardiovascular and cerebrovascular diseases. One of the newly developed, ongoing interdisciplinary research projects in Li's laboratory, in collaboration with Maxim Cheeran, PhD, a virologist and neuroimmunologist, and Walter Low, PhD, a neuroscientist and computational biologist, is to define the acute and long-term impact of SARS-CoV-2 infection ("long-COVID") and its interaction with lipid-related genes on cognitive function and pathogenic processes in aging and Alzheimer's disease.

LINKS BETWEEN ALZHEIMER'S DISEASE AND HEART HEALTH. University of Minnesota researchers recently published a study in *JAMA* that found a connection between heart health and dementia. The team used echocardiography to determine that atrial

myopathy—abnormal left atrial function and size—is an independent risk factor for dementia. Lin Yee Chen, MD, a cardiologist and director of cardiac electrophysiology at the University's Medical School, was a principal researcher. Starting in 2016, his team studied 4,096 participants over six years, with 531 developing dementia. Visual ultrasounds of the heart revealed that the lowest quintile of left atrial function measures was significantly associated with a 1.5 to 2.0-fold higher risk of developing dementia.

ROLE OF EXERCISE IN DEMENTIA. Does combining aerobic exercise with cognitive training delay the onset of Alzheimer's disease? Dereck Salisbury, PhD, an assistant professor in the College of Nursing, leads a team that is using virtual reality and an activity called Exergame to test this theory.

MDH

The Minnesota Department of Health is working on several other fronts related to dementia. It does surveillance of statewide data, including analyzing and disseminating findings, and its staff is working with the CHW Alliance to develop a brain health and dementia-focused education guide for community health workers. In addition, MDH has been integrating brain health into its existing chronic disease communications while also helping primary care organizations implement best practices in dementia screening, care management and caregiver support.

The department also works with community partners on risk reduction and caregiver support initiatives. MDH has the capacity to work with local providers and increase awareness and access to services, says Alex Dahlquist, MDH community health systems coordinator.

Another key focus of the department's work involves caregiver health and well-being, especially critical because of the mental and physical stress they experience, says Renée Kidney, an epidemiologist in MDH's Center for Health Promotion.

Minnesota has 171,000 caregivers of people with dementia; 55% have chronic health conditions and nearly 30% have a history of depression. "Alzheimer's is affecting a lot of people—those who have the disease and the families providing care," Kidney says. "Having dementia-friendly communities and a broader infrastructure for caregivers living their lives is important." MM

Suzy Frisch is a Twin Cities freelance writer.

"Alzheimer's is affecting a lot of people—those who have the disease and the families providing care. Having dementia-friendly communities and a broader infrastructure for caregivers living their lives is important."
Renée Kidney



Patrick Zook, MD, and Tami Kolbinger do assessments for dementia and consult with both patients and caregivers on options for care.

PHOTO BY RICH RYAN PHOTOGRAPHY

OUR DEMENTIA CARE SYSTEM

We can do better

BY PATRICK ZOOK, MD

I'm sorry, your Mom has Alzheimer's. There's nothing we can do. Just come back again in six months or a year."

This, or something like this, is what clients at the St. Cloud Dementia Resource Center (DRC) say they were told after their previous dementia workup (often by an office assistant) of their loved one. Our experience since seeing our first clients on April 12, 2021 is that we need to do better, but the modern American medical model of care has convinced most of us (clinicians too) that any real "cure" or valid treatment can only come through expensive drugs, imaging techniques or procedures that work

quickly, without much patient or caregiver time and effort—and that are covered by insurance.

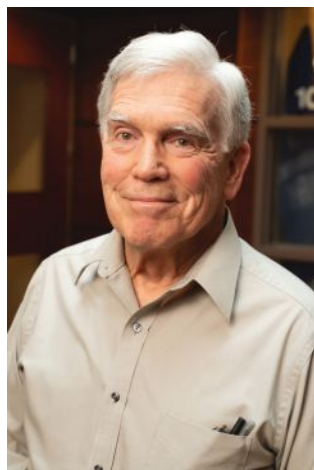
After almost a year's experience evaluating DRC clients for dementia symptoms or for a dementia risk-assessment and amelioration strategy, we can now say that well-informed Minnesotans are not only ready but eager for a new, more hopeful and personal medical model for their dementia care—well beyond just Dx and Rx, although starting there certainly makes sense. Most patients and their families don't feel the agency or power to directly ask for more. Most are too polite to say, "Is that all you can do for us?"

Is there nothing more that we can do for Mom?”

Our modern medical model fails to consider that dementia is really a family systems problem, where caregiver health is just as much at stake as that of the loved one living with dementia.



Patrick K. O'Rourke, MPA/CFRM, executive director



Patrick Zook, MD, founder and board chair



Tami Kolbinger, ADC/MC, CDP, CADDCT, care navigator/educator

PHOTOS BY RICH RYAN PHOTOGRAPHY

tia care excellence like the DRC in St. Cloud? By “funding,” I mean creating the closest thing to a financially sustainable model of a DRC, then guaranteeing budget neutrality for each DRC of a statewide consortium of dementia clinics, similar to

If there are two or three caregivers for every person living with dementia, then the approximately 30% increased risk for cardiovascular disease, cancer, depression and even dementia they reportedly suffer is really at least as serious (and expensive) as the dementia. We have (at least nominally) various dementia caregiver support groups. But as dear, generous and thoughtful as most of their leaders are, very few of them are medically knowledgeable about dementia beyond basic information. When we tried calling several of them recently, we found that most have disbanded, their leaders are nearing retirement, or they are struggling with virtual meetings, leaving sustainability of this valuable resource doubtful after COVID. The clinician dementia office notes that we read during our past history chart reviews rarely mention any serious consideration or assessment of caregiver status, health or backup.

In 2010, the Minnesota Legislature directed Minnesota's Department of Health and Board on Aging to re-do a comprehensive state-wide assessment of dementia resources and capability for handling the expected “silver tsunami” of increased dementia prevalence. Without much progress by 2016, another more comprehensive study was ordered and the Alzheimer's Disease Working Group was commissioned to repeat the study with a wider range of experts and activist professionals. Its work was completed in late 2018 and a 65-page report with several detailed recommendations was presented to the Legislature in January 2019. Recommendation #16 states: “The state should actively support creative regional efforts to establish community dementia resource centers. These centers should work in partnership with each region's medical community to create a better web of support for each resident needing services.”

What if Minnesota were to actually initiate this in the year of a \$9 billion-plus budget surplus by funding pilot centers of demen-

how it's done in Florida and Wisconsin but using whatever model works best for Minnesota.

My experiences serving as a contributing participant to the Alzheimer's Disease Working Group, leading four Dementia Community Action Network community advisory council meetings in St. Cloud and seeing clients and families living with dementia for the past year indicate that an ideal center of excellence dementia clinic would be like the “dream memory clinic” described by Robyn Birkeland, PhD, and Joe Gaugler, PhD, et al at the University of Minnesota in an article last summer in the *Journal of Geriatric Psychiatry and Neurology*. They reported on the operations,

staff, capacity and fate of 11 Minnesota “memory clinics” as of 2019. The clinics were run by a variety of clinicians, including social workers, psychiatrists, advance practice providers and neurologists with widely varying caseloads and schedules.

Those that failed typically succumbed to financial

shortfalls after grants or sponsorships ran out and Medicare reimbursements failed to cover costs. The study authors were not able to discern a best practice dementia clinic from the variety of operations that they observed, but they polled the respondents of the 11 clinics, asking them to describe the characteristics of a theoretical best-case “dream dementia clinic.”

For an ideal dementia clinic, the respondents recommended more clinical staff, care-coordinators that could act as a point person for patients to call with any questions, more time with patients and caregivers, fixing the broken fee-for-service model that fails to pay adequately for quality, a more thorough service, locating most care in the same place, prescription drug review, more emphasis on non-pharmacological treatment and more caregiver educational opportunities. I couldn't agree more.

Our modern medical model fails to consider that dementia is really a family systems problem, where caregiver health is just as much at stake as that of the loved one living with dementia.

If we were to build a state-wide consortium (20-25) of such dream dementia clinics, one at a time, supported by stable Minnesota legislation for at least a pilot study while we wait for Medicare and insurers to catch up to and reimburse this innovative model of dementia care, then we could decide if this model will prove to be successful clinically and feasible financially. Our St. Cloud DRC experience shows promise that it can save substantial insurance and hospital costs by preventing dementia crises, suffering, injuries and hospital admissions seen with the current systemic undertreatment of dementia and caregivers.

Our experience indicates that clinicians staffing such a clinic should have more of a primary care, whole-person focus through the prism of dementia with a rich primary care experience and not limited to just neurology, cardiology, psychiatry, social work or any other subspecialty perspective. Guidelines for each of our colleagues in subspecialties like these were written with much younger patients in mind and without consideration of the complicating metabolic disruptions of Alzheimer's disease or other dementias, especially with respect to much older adults. There seem to be very few neurologists specializing in dementia outside of our large metro academic centers. We appreciate and value the opinions of our general neurologists and their diagnosis of non-dementia related neurologic deficits due to other neurologic conditions. We are especially glad to subsequently see their patients in our DRC after they diagnose subjective cognitive impairment or mild cognitive impairment, since the earlier we can see them in their neurodegenerative process the more we can do for them with our DRC process. Although most primary care clinicians remain uncertain about diagnosing mild cognitive impairment

or early dementia, as stated in the 2022 Alzheimer's Association Report, we hope that collaboration with our DRC team will encourage and empower them to do more full-spectrum quality dementia care. Our DRC process is modeled after protocols

leagues so that they begin to see dementia as treatable with a great deal that can be done.

The Bredesen model of care involves doing a thorough medical and personal history looking for dementia risk factors;



Education and support for caregivers is an important part of the work of the DRC team in St. Cloud.

PHOTO BY RICH RYAN PHOTOGRAPHY

developed by neurologist Dale Bredesen, MD, at Apollo Health and the Buck Institute in California. He has published a review of more than 1,000 cases of his clients who have improved their dementia symptoms—some to the extent that they could return to work and resume their normal lives. Most, but not all, were early in their disease process. Some had very low scores on the Montreal Cognitive Assessment (on a scale of 0 to 30, a score of 26 and higher is considered normal; those with mild cognitive impairment score an average of 22.1) or similar scores on other tests.

What we do during our evaluations at the DRC in St. Cloud is similar to what Bredesen teaches. Stark Law restrictions prevent us from ordering any tests or referrals that might benefit our office facility donor, CentraCare, so our evaluation reports make “recommendations” to referring providers who can then choose to order the tests or referrals at their own discretion. This slows us down in our effort to bring this new model of dementia care into common medical practice, but it makes it more likely for us to gradually win over our primary-care dementia col-

a complete medication review, physical exam and observation; caregiver interview; a list of identified dementia risk factors; completion of a 47-question risk factor assessment form; cognitive testing; caregiver dementia severity rating; geriatric depression testing; and more—all from a two-hour intake with our care navigator/educator (point person), a one- to two-hour online or paper medical chart review by a physician and a two- to three-hour initial evaluation with one of our physicians and our care navigator. Our six- to seven-page initial evaluation reports are shared with clients, caregivers and referring clinicians, as is a “colleague letter” that introduces our DRC clinic, staff and board of directors and states our desire to collaborate with them in our mission to improve access to quality dementia care in our community. The report ends with a list of diagnoses, 15–25 recommendations for the referring clinician and client and a list of some achievable lifestyle and clinical goals for the patient and their caregivers. These recommendations and goals are reviewed in detail with clients and caregivers as a strategy to ameliorate dementia risk

factors and augment their dementia resilience by reinforcing their healthful activities and practices.

We also do dementia risk assessments on clients who do not have any symptoms of dementia. These are just as time-consuming and thorough as our initial dementia evaluations. We think these eventually will become a large part of our services and will delay dementia and prevent morbidity for many Minnesotans.

How DRC works

DRC can make a difference in the quality of life of both people with dementia and their caregivers. It's not a quick-fix at all; it takes time and individual attention. We approach dementia care with thorough evaluation of each client's medical situation through the lens of dementia and cognitive function. This can't be done well in a 20-minute visit.

We don't rely on drugs, extracranial magnetic stimulation or sauna treatments or anything like that to deal with cognitive decline. (In fact, at our evaluations, we often see cognitive side effects of drugs prescribed for other conditions.)

We look to the work of Dale Bredesen, MD, creator of the Bredesen Protocol and author of both peer-reviewed research and books about how to prevent, reduce and even reverse dementia symptoms by assessing and then dealing with unhealthy lifestyle patterns and by treating medical conditions like sleep apnea, depression, insulin-resistance, etc. that can cause or increase dementia symptoms.

We expect that most of the good we do is preventing decline or slowing it down. Although we have plenty of soft data with testimony of clients and caregivers, it will take years to prove that we can make a difference.

We worked with John and Mary (names and some details changed to protect their privacy) and their caregivers.

John

John was originally evaluated for dementia in April 2021. He had lost 40 pounds due to dementia and other factors, but his cardiologist had him taking a potent

statin drug, despite it causing him almost unbearable muscle pain (a common side effect) and even though he had a low LDL level, far below what's needed for a man with coronary artery disease. He also had a very slow pulse, in the 50s, but was on a potent beta blocker. He was lethargic and napped often and had stopped doing the yard work that he previously enjoyed. His muscles hurt too much to exercise and the lack of exercise had caused sarcopenia (muscle wasting) and made it difficult for him to sleep well.

After many calls with his wife (an outstanding caregiver), me and the cardiologist, the cardiologist agreed to stop the statin and withdraw the beta blocker. This relieved the muscle pain; John regained 10 pounds, started exercising again, regained enough muscle strength to do yardwork and slept much better. His pulse improved to the 70s and 80s (more brain blood flow), his outlook improved and his wife's stress level improved.

John and his wife participated in our eight-week Guided Autobiography class series, led by retired St. Cloud State University professor Steve Hoover, PhD, and enjoyed it with the others in their group.

We recently saw John for his fifth follow-up visit. We continue seeing and supporting clients, including caregivers, at least quarterly. I think we may have prevented a fall and/or a hospitalization or two for John and his wife over the past 11 months.

Mary

Mary was seen for cognitive symptoms with her not-so-supportive second husband. She had measurable reduced cognitive function but was barely 60 years old. She was on three anti-seizure drugs, although she did not have a seizure disorder. She was also on three antidepressants, prescribed by a psychiatrist, with the combination of her medications creating a high anti-cholinergic burden, with cognitive side effects likely. Her neuropsychiatric testing showed minimal cognitive slowing—likely due to something other than Alzheimer's dementia. Her dementia

risk labs were mostly normal, as was her head MRI.

Evaluation and follow-up revealed Mary's history of abuse, endured since childhood. We recommended that she consider a partial hospital admission by her psychiatrist to attempt supervised, gradual withdrawal from some or all of the drugs that had been prescribed for chronic pain in her neck and back. She confided in us that she had been abused as a child, then by her first husband and now by her stepchildren.

Once she is off her medications and has had more counseling to deal with her history of abuse, we'll be able to see if her cognitive function improves. The stress of both past and present abuse represents a significant risk for future dementia.

Central Minnesota Dementia Community Action Network

The Central Minnesota Dementia Community Action Network (D-CAN) was registered as a Minnesota 501c3 in December 2019. The board of directors includes five CentraCare physicians, a patient/family advocate, an attorney, an accountant and some experienced businesspeople well known in the St. Cloud and Central Minnesota area. The enhanced agency and connections of the board can help overcome the social/political inertia that has plagued others trying to move to a better way to deal with dementia in our state. Four community advisory council strategic planning meetings were held in the year before achieving nonprofit status; these included representatives from Congress, major health insurers, physicians and other clinicians, social workers, clergy, patient/family advocates, long-term care facilities, Alzheimer's Association, hospital and clinic staff, secondary and graduate education and other community activists. We compiled evidence of gaps in our community's system of dementia care and considered several options for best solutions to the gaps. We concluded that development of an identifiable center of excellence for dementia care would offer the best way to address the gaps—the worst being the

five- to six-month wait to see a neurologist for dementia evaluations.

The hardest part was simply getting started. The St. Cloud Whitney Senior Center provided free space to start seeing clients as of April 12, 2021. Public speaking engagements at Whitney and Dementia Community Action Network supporter contacts provided the first wave of clients. After the pilot, we were able to move into

CentraCare donated space in one of its St. Cloud office buildings (Midsota Building) on September 1, 2021. The board hired Care Navigator/Educator Tami Kolbinger in October, 2021, and Executive Director Patrick O'Rourke in December. Medical Director Chris Tacl, MD, and I have offices to see clients and families, plus a larger board room for up to 10 people when needed. A classroom is used for

family education, support group meetings and guided autobiography classes by Steve Hoover, PhD, a retired psychology professor.

Besides the challenge of figuring out the best clinical process, there is the big issue of financial sustainability. Whether we use the DRC model of care or not, Minnesota will have to decide if it is going to put some money where the greatest problems are—especially for older adults, who seem to be increasing in rural areas; they can't all drive to Minneapolis/St. Paul, Rochester or Duluth for regular quality dementia care. We believe our process can bring considerable financial benefits to the not-so-short-term bottom lines of health insurers and are looking for opportunities to partner on pilot studies.

We need to develop a better Medicare reimbursement system for quality dementia care. Our DRC has been applying for insurance and Medicare reimbursement for the past several months, with help from a Medicare consultant. Even if we can bill creatively for our services, we are unlikely to cover more than 50% of our budget. We have been able to keep the doors open due to charitable contributions, in-kind work of our board members, in-kind furniture donations by CentraCare and local businesses and some grants, including a sizeable FY 2022 Dementia Grant from the Minnesota Board on Aging and grants from CentraCare Foundation and the Minnesota Medical Association Foundation.

While we wait (don't hold your breath) for relief and support from the government and insurers, we can build and test what Minnesota needs for quality dementia care for all. **MM**

Patrick Zook, MD, is president and founder, Central Minnesota Dementia Community Action Network.

Central Minnesota Dementia Summit

MAY 12, 9AM-1PM

Dale Bredesen, MD, will be the keynote speaker (live, online) at the annual Dementia Summit. Patrick Zook, MD, president and founder, Central Minnesota Dementia Community Action Network, will moderate and lead a panel of local clinicians.

Bredesen, currently a professor at UCLA, is the founding president and CEO of the Buck Institute for Research on Aging. His work has led to the discovery of subtypes of Alzheimer's disease, followed by the first description of reversal of symptoms in patients with MCI and Alzheimer's disease, with a precision medicine protocol, and a recent successful proof-of-concept trial.

The Dementia Summit, presented by the Central Minnesota Dementia Community Action Network, will include information on:

- A new and enhanced dementia care system that looks at the causes of dementia.
- Risk factor reduction to slow the progress of the disease.
- Examples of successful management of each of the five types of Alzheimer's dementia.

The Dementia Summit will be both live and online. Registration is required at <https://dcan-mn.org/summit> to attend either. The live event will be held 9am to 1pm, May 12, at the Paramount Center for the Arts, 913 W. St. Germain Street, St. Cloud MN.

The Summit is at no cost to attendees, but those interested in CME credit (up to 3 CMEs or CEUs) must pay \$95 at registration.

Sponsors and partners of the summit are: CentraCare Health, City of St. Cloud-Whitney Senior Center; Dale Bredesen, MD; Paramount Center for the Arts; Minnesota Medical Association; and Minnesota Board on Aging.

WHEN YOUR PATIENT HAS DEMENTIA

BY LINDA PICONE

A primary care physician doing an annual Medicare physical, or a specialty physician examining a patient with a broken bone, uncomfortable physical issues or ongoing medical care may encounter dementia, or the possibility of dementia in two ways:

- The patient may not have been diagnosed with dementia, but seems to be confused or unable to understand the physician's diagnosis and recommendations.
- The patient has been diagnosed with dementia and the physician is unsure that their recommendations will be understood and followed.

In both cases, there are resources that can help the patient, the patient's caregivers—and the physician.

"If dementia is suspected, that person should be referred to an appropriate specialist, whether that's a neurologist or a geriatrician," says Joe Gaugler, PhD, professor and Robert L. Kane endowed chair in Long-Term Care at the University of Minnesota. "Someone who has experience and expertise in diagnosing what the cause of dementia is. It could be Alzheimer's, it could be other reasons, potentially it could be depression that's impacting memory, or a non-chronic, non-progressive type of dementia. A specialist is trained to tease those nuances apart."

More complicated is a patient who already has been diagnosed with dementia. In that case, Gaugler says, "It's important to identify what the care context is for this patient. Do they have a care partner, and if they do, how do you effectively incorporate that care partner into the adoption of a recommended care regimen?"

The emphasis of many expert panels on dementia today is how to ensure that care partners become part of decision-making in the care for people with dementia. "If they're not included, there's a real risk of adverse outcomes," says Gaugler.

Some primary care providers and healthcare systems have a special form they can sign, with permission of the patient and

a care partner, to introduce the patient to community-based resources. "It's more of a warm hand-off, rather than just 'Here's a card,'" Gaugler says.

Primary care physicians, in particular, should take time to make sure they and their clinic understand the resources available for patients and their care partners. "If they have information and resources at hand, they can have confidence that they know where to connect their patients," Gaugler says.

Resources can include the Alzheimer's Association and organizations and specialty clinics that can diagnose dementia and provide ongoing care management, social support and case management. **MM**

Linda Picone is editor of *Minnesota Medicine*.

DEMENTIA RESOURCES FOR PHYSICIANS

ALZHEIMER'S ASSOCIATION

<https://www.alz.org/professionals/health-systems-clinicians>

Diagnostic and management tools, downloadable resources (including a suspected Alzheimer's disease packet) and resources to share with patients and caregivers.

MINNESOTA ALZHEIMER'S ASSOCIATION

<https://www.alz.org/mnnd>

Local resources, updates on research, educational programs, home safety checklist and more.

NATIONAL CENTER FOR INTERPROFESSIONAL PRACTICE AND EDUCATION

<https://nexusipe.org>

Books, articles and webinars on everything from diagnosis to the medical management of dementia for healthcare professionals. (Search for "dementia" topics from home page.)

HEALTH RESOURCES & SERVICES ADMINISTRATION

<https://bhw.hrsa.gov/alzheimers-dementia-training>

More than 25 training modules, including 16 on outpatient care, on everything from discussing a dementia diagnosis to ethics and capacity issues.

ACT ON ALZHEIMER'S

<https://www.actonalz.org/provider-practice-tools>

Dementia-specific tools and resources for providers, including protocols for managing cognitive impairment. Both local and national versions available.

ON-LINE PROGRAM
FOR THOSE WITH
DEMENTIA

PHYSICAL MOVEMENTS COMBINE WITH MIND-BODY AWARENESS

BY LINDA PICONE

Deborah E. Barnes, PhD, MPH, has been researching dementia for decades. Now, through Together Senior Health, that research has led to the creation of a cognitive health tool that will be available online.



Deborah E. Barnes, PhD, MPH



Cynthia Benjamin

MOVING Together, the cognitive health program, brings together movement therapy, mindfulness and social connection that Barnes, chief science advisor, and Cynthia Benjamin, CEO and co-founder, hope will be adopted by Medicare insurance plans in a way similar to that of SilverSneakers.

The MOVING Together program was announced in early April, but it comes out of more than 15 years of research that was backed by three grants from the National Institute of Health. “Basically, we created the program using an in-person model,” says Barnes. “The goal was to create an integrative program that combines physical movements with mind-body awareness, social engagement and music to support well-being.”

This means something as simple as having participants do self-massage to connect their touch to the recognition that that’s what they are doing. “We do a series of movements that meet people where they are, and then we help them build functional ability over time,” Barnes says.

“We orient people to the present moment by having them notice physical sensations and breathing, which is something someone with dementia can usually do. They can sense something like, ‘Is my hand hot or cold?’ ‘How does it feel to take in a big breath and exhale?’”

Caregivers can and often do participate and some of the movements in the program are interactive.

One of the benefits of the program, Barnes says, is that those with dementia see others online taking part. “They see that they are part of this community.”

Barnes did her initial research through the University of California San Francisco, where she is an associate professor of Psychiatry and Behavioral Sciences and Epidemiology and Biostatistics. She began with in-person groups at adult day centers in the San Francisco area, then through partnerships with Kaiser Permanente and then the Veterans’ Administrations.

The response to the in-person programs was enthusiastic. “People finished our research programs and wanted to continue,” Barnes says. “They reported a lot of benefits, like better balance and mobility, better attention and feeling happier and more connected to others.”

The positive response caused Barnes and Benjamin to think about how to get the program to more people. “We asked ‘Can you reach people with dementia online,’” Benjamin says. “The answer is yes, and we can do it in a way that is meaning-

ful for them, with instructors who are well-trained for this audience.”

Five years ago, the answer to that question might have been different, she says, but “We’re at a point in time right now, especially after the move to online with the pandemic, that it is possible. People have more technology in our homes.”

The program was just launched, so Together Senior Health is just now approaching insurers to include MOVING Together, but research is still going on and physicians can refer patients to the ongoing study, which is actively looking for participants. The study is funded by a Small Business Innovation Research grant through the National Institute on Aging and the National Institutes of Health.

The results of the current clinical trial—if it can improve quality of life or even improve cognitive ability—likely will come next year, Benjamin says.

“In the meantime, we do have stories,” says Barnes. “Our instructors can see how participants respond. They talk about how deeply moving it is to watch as quiet, somewhat unresponsive people suddenly come alive once the class starts.”

For more information

For more information and to check eligibility for the research study (a live-streaming online class that meets twice weekly for three months), go to <https://www.togetherseniorhealth.com/current-research-study>. Together Senior Health also offers a monthly webinar at no cost.

Linda Picone is editor of *Minnesota Medicine*.



News Briefs



Nominations for MMA officers now open

Nominations are open for MMA president-elect, trustees, and delegates and alternates to the AMA.

Please send any nominations for these positions to Shari Nelson (snelson@mnmed.org) by June 3. For questions about leadership qualifications and expectations, please contact Janet Silver-Smith, CEO, at jsilversmith@mnmed.org or 612-362-3763.

The MMA Nominating and Leadership Development Committee will meet later in June to finalize a slate of candidates. The member-wide election will occur in August and will be open for 30 days.

New trustees will assume their roles October 1; terms for members of the AMA delegation begin January 1.

Nominate a peer for one of MMA's awards

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

Award categories include:

- **Distinguished Service Award.** Given to a physician who has made outstanding contributions in service to the MMA on behalf of medicine and the physicians of Minnesota during their career.
- **President's Award.** Designated for individuals who have made outstanding contributions in service to the goals of the MMA.
- **Medical Student Leadership Award.** Presented to a member of the MMA Medical Student Section who demonstrates outstanding commitment to the medical profession.
- **Resident & Fellow Leadership Award.** Presented to a member of the MMA Resident & Fellow Section who demonstrates outstanding commitment to the medical profession.
- **COPIC/MMA Foundation Humanitarian Award.** This award is presented each year to honor a physician for volunteer medical services and contributions to their community, specifically to MMA members who go above and beyond to help address

the healthcare needs of underserved populations in Minnesota. The recipient of the award designates a \$10,000 donation from COPIC to be provided to a healthcare-related 501(c)(3) organization within Minnesota.

- **Eric C. Dick Memorial Health Policy Partner Award.** This award will be given to an individual, a group of individuals, a project or an organization that demonstrates commitment to pursuing sound public policy, building coalitions, creating and/or strengthening partnerships with the goal of improving the health of Minnesotans or the practice of medicine in Minnesota. Dick was the MMA's manager of state legislative affairs from 2010 until his death in January 2021.
- **James H. Sova Memorial Award for Advocacy.** Given to a person who has made a significant contribution to the advancement of public policy, medical sciences, medical education, medical care or the socio-economics of medical practice. Sova was the chief lobbyist for the MMA from 1968 until his death in December 1981.

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

In-person networking events return

After a two-year absence due to the pandemic, the MMA's Doctors' Lounges are back. Join your colleagues for a beverage and casual conversation at one of five locations this year. These casual events offer physicians and physicians-in-training an opportunity to get together and network. They are also an opportunity to celebrate the practice of medicine, thank our members and welcome new or prospective members. Significant others and children are welcome, too! Drink tickets and appetizers will be provided.

The 2022 Doctors' Lounges will take place:

- May 19, 6 to 8 pm: Bitter and Pour, 18 3rd St SW, Ste 1, Rochester
- June 16, 6 to 8 pm: Day Block Brewing, 1105 Washington Ave S, Minneapolis
- July 14, 6 to 8 pm: Bad Habit Brewing, 25 College Ave N, St. Joseph
- August 11, 6 to 8 pm: The Lynhall No. 3945, 3945 Market St, Edina
- October 20, 6 to 8 pm: Site to be determined in Duluth
To register, visit www.mnmed.org/socials.

Report: Quality measures declined statewide in 2020

Not surprisingly, given the pandemic, statewide performance on several healthcare measures declined in 2020, according to a report released in March by MN Community Measurement (MNCM).

The *Minnesota Health Care Quality Report: Results for Care Delivered in 2020* includes statewide and medical group performance measures for preventive care, care for chronic conditions like diabetes and heart disease, depression care and other measures.

The most recent results come from data reported to MNCM in 2021, covering services received by patients in 2020.

Highlights include:

- There continues to be significant variation in performance across medical groups. For many measures, the gap between scores of the lowest and highest performing medical groups is more than 50 percentage points.
- Statewide performance fell for most measures in 2020, likely a reflection of significant disruptions in care due to the COVID-19 pandemic. Measures showing the largest declines in statewide performance were Controlling High Blood Pressure (-12.2 percentage points), Osteoporosis Management in Women Who Had a Fracture (-11.4 percentage points) and PHQ-9/PHQ-9M Utilization for Adults (-8.8 percentage points).

Recovery from the impacts of the pandemic will require outreach to patients who missed important preventive care or chronic disease care, along with concerted efforts to fill gaps in data that are needed for ongoing follow-up and management of chronic diseases like diabetes, heart disease, asthma and depression.

The report includes performance data for approximately 150 medical groups that operate about 1,000 clinics in Minnesota and border communities in neighboring states. Because of pandemic-related disruptions to care delivery and operations in 2020, MNMCM chose not to publish results for individual clinics this year. Clinic-level public reporting will resume with 2021 performance data.

Act that addresses healthcare worker burnout signed into law

In mid-March, President Biden signed into law the Dr. Lorna Breen Health Care Provider Protection Act, which seeks to address burnout among healthcare workers.

Breen was an emergency room physician in New York City who, after working tirelessly at the beginning of the COVID-19 pandemic, took her own life in April 2020.

The bill directs the U.S. Department of Health and Human Services (HHS) to award grants to hospitals, medical professional associations and other healthcare entities for programs to promote mental health and resiliency among healthcare providers. In addition, HHS may award grants for relevant mental and behavioral health training for healthcare students, residents or professionals.

“Physician burnout is a complex challenge—one that requires a paradigm shift from a system where physicians think that burnout, mental health conditions or suicidal thoughts are something they must overcome by themselves, to one where they see the support system around them willing to help them seek mental health care,” said Gary Price, MD, president of The Physicians Foundation in a statement. “The passage of [this Act] is a first-of-its-kind, national endeavor to support health and hospital systems, medical professional associations and other healthcare organizations to start making this paradigm shift a reality for physicians collectively and individually.”

A 2021 survey from the Physicians Foundation found that 61% of physicians report experiencing feelings of burnout.

Last year, the MMA created the Practice Well Collaboratory, an innovative and cooperative thought-laboratory to share, promote and explore strategies and best practices to support physician health and well-being and to combat physician burnout. Learn more about it at www.mnmed.org/resources/MMA-Practice-Well-Collaboratory.



Virtual Day at the Capitol provides forum to interact with legislators online

On March 1, Minnesota physicians and physicians-in-training gathered online for the MMA's Day at the Capitol, which included a review of the MMA's top legislative priorities for the current session and a talk from state Rep. Jennifer Schultz (DFL-Duluth).

“Today is about establishing and strengthening relationships with your legislators,” MMA President Randy Rice, MD, told the group. “Your role is crucial in promoting legislation that is good for the patients you serve.”

MMA staff scheduled dozens of meetings with lawmakers across the state. Top priorities discussed included:

Protecting patients from arbitrary medication changes

- Ensure patients have access to medications by prohibiting insurers or pharmacy benefit managers (PBMs) from altering patient's drug coverage for medications they are already on, which currently can occur in the middle of a patient's contract year.
- Improve patient health by prioritizing the decisions made between a physician and a patient, rather than changes to a drug's formulary by an insurer.

Improving patient safety with straightforward communications

- Improve patient safety by protecting from legal discovery discussions that are held between physicians and patients following an adverse event.
- Endorse the Communication and Optimal Resolution (CANDOR) model, which is designed to include patients and family members in timely and honest information following an adverse event, supporting caregivers and working to improve patient safety.

Create a POLST Registry

- Authorize a feasibility study to establish a statewide registry for Provider Order for Life-Sustaining Treatment (POLST) to

ensure EMS and emergency departments have access to POLST orders patients may have.

The MMA thanks its 2022 Day at the Capitol partners:

American College of Emergency Physicians, Minnesota Chapter; American College of Physicians, Minnesota Chapter; Minnesota Academy of Family Physicians; Minnesota Academy of Ophthalmology; Minnesota Association of African American Physicians; Minnesota Psychiatric Society; and Zumbro Valley Medical Society.



Grant to help with transition from pediatric to adult care for complex cases

The MMA Foundation (MMAF) recently received a grant from the COPIC Medical Foundation to develop a sustainable and collaborative knowledge-sharing community to improve the transition from pediatric to adult care for youth with medical complexity.

The work will be accomplished through the creation of a Project ECHO that will provide easily accessible practical resources, guidance and expert consultation to improve the competence and confidence of Minnesota adult primary care clinicians to manage youth with complex conditions, thereby increasing the capacity and number of such clinicians willing to accept new patients.

“Transition is a universal experience for patients with medical complexity, yet there are limited resources to aid providers as they navigate this period of medical instability and trauma together with patients and their families,” says Tori Bahr, MD, project medical advisor and associate medical director of Pediatrics at Gillette Children’s Specialty Healthcare. “This ECHO project will fill this void, giving providers across the state an opportunity to come together, talk about difficult transition-related cases and find solutions to the immediate care needs of their patients while exposing systems-level barriers to successful transition.”

The grant was part of the COPIC Medical Foundation’s 2022 funding cycle that focused on initiatives designed to reduce fragmentation across care settings. A top concern in patient safety, breakdowns in care from a fragmented healthcare system can lead to readmissions, missed diagnoses, medication errors, delayed treatment, duplicative testing and procedures and reduction in

quality of care leading to general patient and provider dissatisfaction.

The COPIC Medical Foundation is a nonprofit organization affiliated with COPIC, a leading medical liability insurance provider and the MMA’s endorsed medical liability partner.

“The COPIC Medical Foundation is proud to support those in healthcare who are making a difference and pushing innovative ideas forward,” says Meredith Hintze, executive director of the COPIC Medical Foundation. “Our grant funding continues to support solutions that can improve patient safety in ways that can be replicated across health care and/or create additional opportunities for expanded applications.”

Founded in 1958, the MMAF, the charitable arm of the MMA, is a nonprofit 501(c)(3) corporation.

The COPIC Medical Foundation is a 501(c)(3) nonprofit organization that is part of the COPIC family of companies, and is guided by its mission “to be a catalyst in improving the quality of healthcare delivery by reducing adverse outcomes and supporting innovation.” Since it was formed in 1991, the Foundation has provided more than \$10 million to improving patient care and medical outcomes through grant funding and other initiatives. These efforts have made a difference in communities by offering support to people, programs and ideas that address healthcare issues and make a difference.

Board adopts new policy regarding public option

The MMA Board of Trustees adopted a new policy at its March meeting that defines requirements for the MMA to lend its support to any state-level public option proposals for Minnesota. The policy was submitted via The Pulse by the MMA Policy Council.

Last year, the Policy Council identified as its top priority the “public option” or a government-run health plan that would compete with private plans to provide more affordable health insurance coverage for Minnesotans.

The policy says the MMA will only advocate for the public option if it follows these standards:

- Plans offered under a public option must result in lower premiums than private plans with equivalent actuarial values.
- The public option may not offer plans with actuarial values below 70%.
- The public option must include offerings in the individual market and may include offerings in the small- and large-group markets.
- The public option must reimburse professional services at rates no lower than Medicare levels. The state should meaningfully engage providers for input on appropriate reimbursement levels.
- The public option shall not require provider participation as a requirement for state licensure.
- The public option should not depend solely on provider reimbursement caps to offer more affordable products. The MMA supports medical loss ratio (MLR) requirements above the current 80% minimum for plans offered under the public option.

- The state should not use its own funds to subsidize premiums or cost-sharing under the public option. Enrollees eligible for advance premium tax credits and cost-sharing reductions under existing federal law should be allowed to use these credits and reductions toward the purchase of plans offered under the public option.
- Prior to the implementation of the public option, the state should contract with a nonpartisan research entity to conduct an actuarial analysis to provide a best estimate as to the net effects of the public option on uninsured and underinsured rates in Minnesota. This analysis should examine potential effects of the public option on provider cost-shifting, the stability of private plan premiums and healthcare supply.
- Should a public option be implemented, the state should publish easily accessible public data at least biennially to monitor relevant performance metrics, including, but not limited to, variables listed in the previous subsection.

Eighty-five members voted on the policy proposal, with 72 voting yes, 10 voting no and three not taking a position.

The Pulse, available only to MMA members, can be used to submit policy proposals for MMA consideration, to vote on policy proposals prior to MMA Board action and to provide feedback on decisions made by the MMA Board.

Health department creates new Health Equity Bureau

The Minnesota Department of Health (MDH) announced in February that it is creating a new Health Equity Bureau to be led by a new assistant commissioner, Brooke Cunningham, MD, PhD.

Cunningham is a general internist, sociologist and assistant professor in the Department of Family Medicine and Community Health at the University of Minnesota. She practices internal medicine at the Community-University Health Care Clinic (CUHCC), a federally qualified health clinic that serves a diverse patient population. Since fall 2020, she has co-directed the University of Minnesota Medical School's Diversity, Equity, and Inclusion (DEI) Thread, which aims to prepare future physicians to advance health equity.

"The MMA applauds Commissioner Malcolm's move to elevate health equity within the state health department," says Janet Silversmith, MMA CEO. "Dr. Cunningham will bring incredible passion, expertise, and clinical experience to this role. We look forward to continuing to work with her in her new position."

The new bureau will house several existing MDH units, including the Center for Health Equity and the new Office of American Indian Health. The structure will also serve as the department's hub for proactive diversity, equity and inclusion efforts, and will lead the department's equity work in the COVID-19 response.

"The pandemic continues to demonstrate with shocking clarity the systemic issues underlying Minnesota's health inequities as well as the troubling health conditions and outcomes magnified by those inequities," says Health Commissioner Jan Malcolm. "The creation of this new bureau builds on what we have learned

during the COVID-19 pandemic and reflects our deepening commitment to health equity in all aspects of public health."

As a primary care provider, Cunningham has advocated for deepening connections and partnerships with community members to improve the quality of healthcare delivery, medical education and biomedical research.

New condition added to state's newborn screening program

Health Commissioner Jan Malcolm has approved an advisory committee's recommendation to add congenital cytomegalovirus (cCMV) to the list of conditions for which Minnesota newborns are routinely screened.

Minnesota will become the first state in the nation to screen every newborn for cCMV. The MMA has been a long-time advocate for the state's program.

Unlike most of the other conditions on the newborn screening panel, which are inherited typically through the genes of one or both parents, cCMV is an infectious disease. It will be the first infectious disease added to the panel.

cCMV is the most common viral infection in newborns. It is estimated that as many as 290 babies out of 65,000 born each year in Minnesota will have the condition. cCMV occurs when the infection is passed from a pregnant woman to her unborn baby and can cause a range of health problems. About 10% of newborns are symptomatic at birth. Symptoms may include a small head, rash, jaundice and an enlarged liver and spleen. These children are also at risk for intellectual disabilities, hearing loss, vision loss and other health problems.

The remaining 90% of children with cCMV have no signs of infection at birth but about 10% are at risk for permanent hearing loss. If detected early, children with cCMV may benefit from antiviral drugs, therapies and intervention of hearing loss (for example, sign language, hearing aids and/or cochlear implants).

Minnesota has one of the most comprehensive newborn screening programs in the country. Since 1964, when Minnesota started screening for PKU (phenylketonuria), all Minnesota newborns have had a blood sample sent to MDH for newborn screening unless their parents opted out of screening. As scientific knowledge has advanced, Minnesota has expanded its newborn screening panel to help detect more conditions that can be helped with beneficial interventions and/or treatment.

The Vivian Act was passed in 2021, authorizing MDH to educate pregnant women and their healthcare providers about cCMV. This legislation also required that the Advisory Committee on Heritable and Congenital Disorders review cCMV as a possible condition for inclusion on the newborn screening panel. The committee finished that work and on January 11 made its recommendation that cCMV be added to the panel.



FROM THE CEO

Finally, spring ... and a lot more to look forward to

We just experienced what seemed to me a particularly long, cold winter. I could not be more excited to finally welcome spring, as stubborn as it has been making its appearance. Despite how long I've been waiting for spring to arrive, there is still much more to look forward to—flowers, green leaves, open windows, biking, boating, grilling, a summer vacation. There is also a lot we are looking forward to at the MMA.

As is true every year at this time, we are looking forward to the conclusion of a productive legislative session. Although much of this year's business was once again conducted remotely, our advocacy staff has tracked hundreds of bills, responded to dozens of requests, weighed in on numerous proposals and advanced the MMA's agenda. As I am writing this column, the Legislature is on its Easter/Passover break. Just before that break started, the House Health and Human Services Committee incorporated two of MMA's key priorities in its omnibus bill. Although predicting how and when the session will conclude is difficult, you can be assured that the MMA will be involved until the final gavel.

Another thing we are looking forward to—after 26 long months—is our return to in-person events (don't spoil our plans, COVID variants)! That's right, starting in mid-May, our popular Doctors' Lounges are back. These events are one of the ways we show our thanks to our members—and we have abundant gratitude for all that you've endured and all that you've given during the pandemic. These events are also an opportunity for us to introduce the MMA to those who are not yet members, so invite a friend or colleague to join you. We look forward to seeing you soon. See page 40 or visit the MMA website for dates and locations.

We are also looking forward to an exciting new project. Thanks to a grant from the COPIC Medical Foundation and the support of many valuable partners, the MMA will soon launch a Project ECHO program to help improve the transition from pediatric to adult care for children with medical complexity. Thanks to clinical and technological advances, many children with medical complexity now live into adulthood. Yet they face numerous practical hurdles in moving from pediatric care to adult providers. Tori Bahr, MD, associate medical director of pediatrics at Gillette Children's Specialty Healthcare, will serve as the project medical advisor. Stay tuned for upcoming details.

These are just the start; we have so much more to look forward to this year: the annual leadership election, Annual Conference (in-person!), Reclaim the Joy of Medicine conference (in-person!), new educational programs, member input on proposed policies, future issues of *Minnesota Medicine*, timely and relevant news and more. What are you looking forward to from MMA? Please reach out and let us know at MMA@mnmed.org. We want to hear from you. **MM**

A handwritten signature in black ink that reads "Janet Silversmith".

Janet Silversmith
JSilversmith@mnmed.org

VIEWPOINT

A new dawn?

Esteemed colleagues, can we officially hit the reset button? Are the worst days of the pandemic over? It would be nice to think so.

By early April, physicians and health-care teams across the country were finally exhaling after months of increased case-loads and a lot of uncertainty brought on by the devastating effects of the Omicron variant. COVID-19 hospitalization numbers dropped to levels not seen since the pandemic first hit in March 2020. Even though more variants will keep the COVID embers aflame, let's collectively exhale!

Finally, the mind-numbing pace has waned, and physicians are booking vacations, no longer racked with guilt for taking much-needed time off to recharge. We all hope that this reduction continues so we can truly experience a fresh start and regain the joy that got us into the practice of medicine in the first place.

We also hope that the reduced COVID-19 caseloads will lead to more pediatric visits, annual checkups and cancer screenings, all of which declined through the pandemic. It would be nice to get back to a proactive mode so that we don't have to keep reacting from one crisis to the next.

With space in hospitals freeing up, patients won't have to wait too long to get commonplace procedures such as endoscopies or cataract surgery. We will also see an increase in visitors as more loved ones will be able to visit patients in hospitals and other care settings.

This change in attitude does not mean that the pandemic is over or that we don't have other serious issues to face. There are many challenges that will keep us on our toes. We still have an opioid epidemic that continues to kill hundreds of Minnesotans

and thousands of Americans every year. The pandemic has devastated our workforce—whether through physicians who succumbed to the virus or the scores of others who decided they had had enough and retired early. We need to replace these caregivers because having a sufficient workforce is a key ingredient in access to care. Speaking of our healthcare human capital, so much needs to be done with our current workforce and its ability to cope with the pressures of the job. Here's hoping patients who appreciate the care they receive will once again make our days worthwhile rather than those who seemed to litigate every bit of evidence-based care we all provided during the pandemic.

We all know this relative sense of calm could change quickly. BA.2 has been on the rise in Europe. It could easily do the same here in America. We need to stay vigilant and continue encouraging vaccinations and testing or we could return to the horrific conditions we faced this past winter. You know the MMA will remain front and center, continuing to advocate for you, your practice and your patients.

On a more personal note, with a decrease in COVID-19 cases, I will finally be able to spend more quality time with my family and embrace a limited schedule. Gone will be days of having arm's length engagement in the name of social distancing, etc. Online school will ease so the kids can be themselves again. We can finally sit down and have dinner, catch up and consider summer plans. The pandemic sure took a lot from us. But kudos to all for staying strong together! Now please find time to enjoy life again! I will! **MM**



Edwin Bogonko, MD, MBA
MMA Board Chair

PHOTO BY KATHRYN FORBES

Even though more variants will keep the COVID embers aflame, let's collectively exhale!



Cohorting patients during COVID

Better outcomes for patients when treatment is standardized

BY LINDA PICONE

As the COVID-19 pandemic rolled into Minnesota in March 2020, healthcare institutions had to figure out quickly how to deal with a situation unseen for 100 years.

“We were scratching our heads as a system, figuring out how to respond,” says Greg Beilman, MD, critical care surgeon at University of Minnesota Medical School and co-lead of the M Health Fairview COVID-19 response team. “My boss, Mark Welton, came up with the idea of cohorting COVID patients on a Friday. I said, ‘What a crazy idea.’ Three days later, we said we thought we could do it and 10 days later we put the first patient in Bethesda.”

Bethesda Hospital in St. Paul was converted to a COVID-only hospital in March 2020 with 35 ICU beds and 55 general-care beds. In November of that year, care transitioned to St. Joseph’s Hospital, with 41 ICU beds and 68 general-care beds. Together, these two hospitals provided care for the patients most severely ill with COVID and increased surge capacity for the M Health Fairview system through June 2021.

The result was “significantly improved in-hospital mortality rates in the COVID-

dedicated hospital group,” according to research published on *JAMA Network Open* on March 3. The authors were Zachary R. Bergman, MD; Michael Usher, MD; Andrew Olson, MD; Jeffrey G. Chipman, MD; Melissa E. Brunsvold, MD; Beilman; Christopher Tignanelli, MD; and Elizabeth R. Luszczek, PhD. Bergman, a resident at the University of Minnesota Medical School, did the data analysis for the study. Luszczek, an assistant professor in the Department of Surgery at the University of Minnesota Medical School, was the senior author.

Patient outcomes from March 1, 2020 through June 30, 2021 at Bethesda and St. Joseph’s hospitals were compared with those of nine other hospitals in the M Health Fairview system. There were 45,609 patients who tested positive for COVID in the M Health Fairview system during the time of the study, 5,504 of whom were admitted to hospitals in the system.

“When you control for severity of illness, there was about a 2% improvement in mortality,” says Beilman. “We believe that improvement is related to the fact that, like everything else, the more you practice something, the better you get.”

At Bethesda and then St. John’s, handling COVID patients was all the healthcare staff did. “You walk in saying COVID patient 1, 2, 3, 4 and 5 and everybody gets deep vein thrombosis treatment, everybody gets the COVID therapeutic treatment, everybody gets their ventilator adjusted the same way,” Beilman says. “It’s not like what I usually do in the ICU, where one patient will have COVID, the next patient will have sepsis, the next patient will have an intra-abdominal catastrophic event—and I’m having to adjust what I do for each patient.”

Cohorting COVID patients also meant safer conditions for those taking care of them, Beilman says. “People dropped everything and went over there and, during the days before vaccination, did so knowing that they had a 5% risk of death.” But none of the staff at Bethesda or St. Joseph’s

got COVID from taking care of patients, he says. “They walked in, knowing they were dealing with patients that could kill them, so we had very good compliance with protective equipment. People were very focused on what they were doing.”

Beilman was not surprised that cohorting led to better results. “There’s good evidence in the literature that places that do a lot of something do a better job at whatever that something is,” he says. “So, with pancreatic surgery, my specialty, a place that does 25 cases a year does better than one that does fewer.”

Being part of an academic health center connected to a large healthcare system not only helped dealing with COVID but also helped with collecting data from the beginning. “For our system, there were some significant advantages to going through this pandemic—although I hate to say it that way,” Beilman says. “It really helped operationalize on the benefits of having an academic institution linked closely with a

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When I trained in the ‘80s, every patient was an individual project. So much of what we do now is the same disease in different patients. The better we can standardize care and use the information about standardization of care, the better our patients are going to do.”

— Greg Beilman, MD, critical care surgeon at University of Minnesota Medical School and co-lead of the M Health Fairview COVID-19 response team

healthcare system. With the COVID information coming out of our really bright physicians on the academic side helping us figure out how we applied that to patient after patient. All of us got very good at breaking down the barriers because we didn’t have enough beds at the University of Minnesota to take everybody that was really sick.”

With the development and distribution of vaccines—“Thank God for the vaccines; it’s taken this from being a potentially fatal disease to something that is an inconvenience for us”—the pressure on hospital and ICU beds eased and Bethesda and St. Joseph’s were turned to different uses than cohorting COVID patients. But the lesson learned can be—and should be—applied for any number of other medical situations, Beilman says.

Healthcare systems and physicians should figure out how to standardize care when and as much as possible. “When I trained in the ‘80s, every patient was an individual project,” he says. “So much of what we do now is the same disease in different patients. The better we can standardize care and use the information about standardization of care, the better our patients are going to do.”

That involves using the electronic medical record, helping providers understand that there are things that should be done the same way for most patients and tracking outcomes in order to get better.

“In my role as a bean-counter at hospitals,” Beilman says, “we are saying, ‘What are the common conditions, what are the best outcomes we can achieve, what are the interventions that relate to those outcomes and how do we get the healthcare teams working together to provide those outcomes for our patients?’”

COVID was an opportunity—and created the necessity—to standardize care and interventions and to learn from the data, and to do that quickly, Beilman says. “This was a good example of how that worked in an overwhelming, miserable situation that I hope never to see again in my career.” MM

Linda Picone is editor of *Minnesota Medicine*.

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SCOTT STEVENS, MD, MPH

- Private practice orthopedic surgeon at The Orthopaedic and Fracture Clinic, Mankato.
- MMA member since 1999.
- Born in Cedar Rapids, Iowa; graduated from Luther College. Medical school at University of Illinois; MPH, University of South Carolina. Orthopedic residency at Medical College of Wisconsin; fellowship in sports medicine/arthroscopy, University of Iowa.
- Married to Laura with children Ben, 21, and Julia, 18, and two cats.

Became a physician because ...

I'd been interested in human anatomy and kinesiology since childhood and after a sports-related stress fracture in high school, I decided on medicine as a career. I was initially leaning toward peds or OB/GYN but after an orthopedic rotation I was hooked. A negative or positive experience in a single four-week rotation can completely alter one's choice of specialty.

Greatest challenge facing medicine today ...

The biggest problem is the computer as slave to the service of the almighty two-headed monster know as coding and billing. I used to get a one-page note from the ER with two to three paragraphs that told a story of the patient's visit, diagnosis, treatment and reason for referral. Now it's seven to eight pages of irrelevant mouse



clicks in which a reason for the visit is somewhere buried. The EMR is outstanding in its portability and quick access to information, but the energy and time spent entering mandatory or required data is a cumbersome, poorly nuanced and impersonal process in which the care of the patient suffers.

I keep life balanced ...

I enjoy distance running and have recently gotten involved in indoor rowing competitions. I also relax by reading books on non-medical topics—history, social science, biography, mystery.

If I weren't a physician ...

Since the rock group Boston isn't looking for a drummer, I'd say a TV meteorologist—I'm a bit of a severe weather nerd and it fascinates me how accurately the predictive models and computer algorithms work, even several days out from an event. These individuals have a lot of responsibility when it comes to informing and protecting the public and assisting people and organizations with daily planning, so there's a bit of panache, a bit of celebrity status that comes with the profession.

DAN PFEIFLE, MD

- Internal medicine resident, Mayo Clinic.
- MMA member since 2019.
- Hometown is Rapid City, South Dakota. Graduated from Drake University in Des Moines, medical school at University of South Dakota Sanford School of Medicine. After residency at Mayo Clinic, will do a fellowship in pulmonary/critical care medicine at Indiana University.
- Married, with "many plants."

Became a physician because ...

I always had a love for scientific inquiry and problem solving, which steered me into the sciences in general. However, it was my desire to interact with people, to meet them where they were and to help that fueled my journey into medicine and career as a physician.

Greatest challenge facing medicine today ...

The disparities in care that affect our patients is the greatest challenge. When patients cannot access care or obtain medications/procedures that are deemed necessary for their care, they



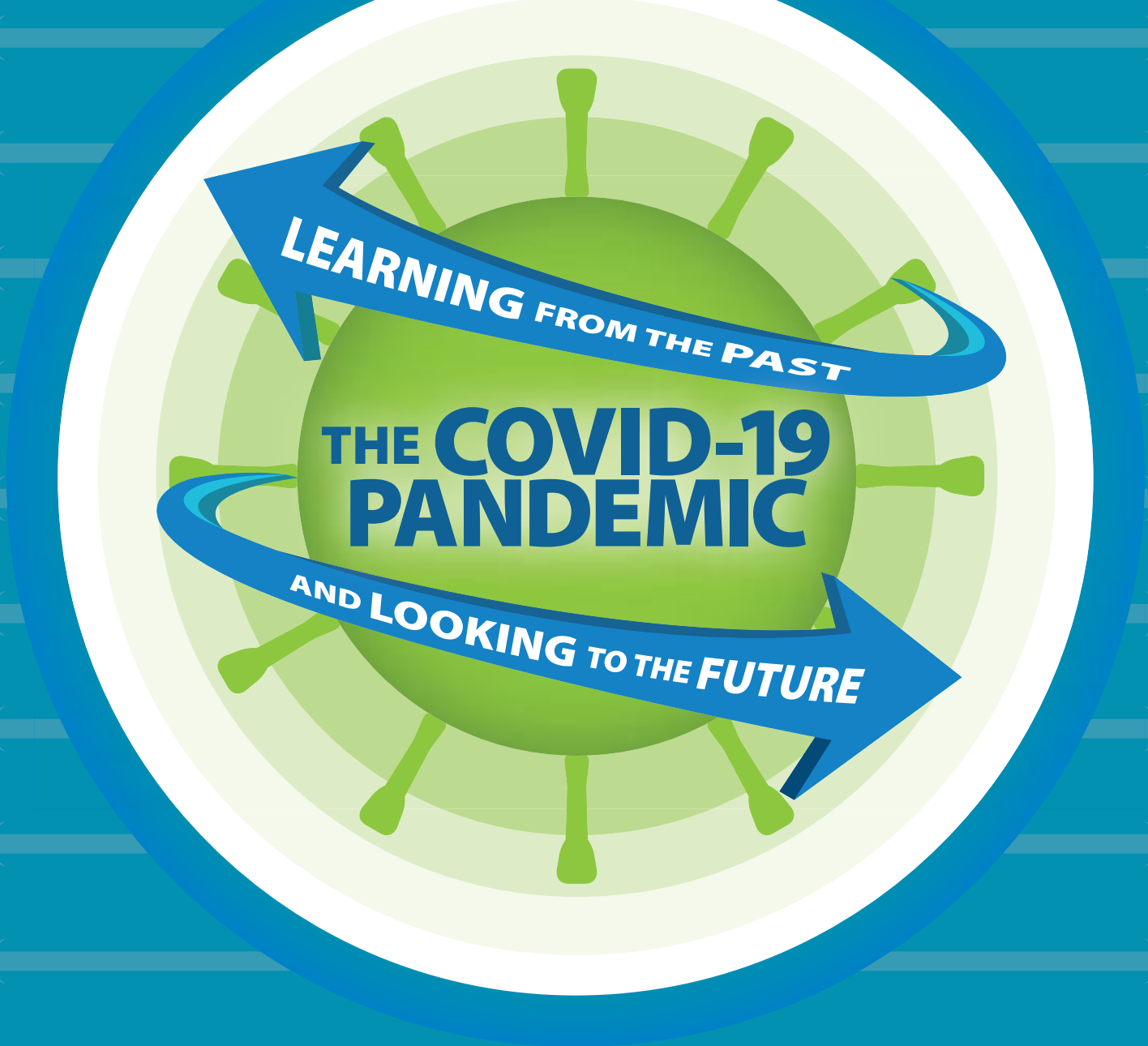
do worse, and this weighs on all of us. These disparities, related to structural racism and socioeconomic discrimination, should be at the forefront of our efforts to address.

Keeping life balanced ...

I endeavor to keep my life in balance, but I'm not always successful—as I'm sure is true for many of us. I try to run or ride my bike to remain physically fit, read some interesting books, play more video games than my wife probably wants me to and get together with friends to have a beer or try a new restaurant.

If I weren't a physician ...

I have always like the water, in particular the ocean, and have enjoyed scuba diving. I think that being a marine biologist would be super interesting as an alternate career version of my life.



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