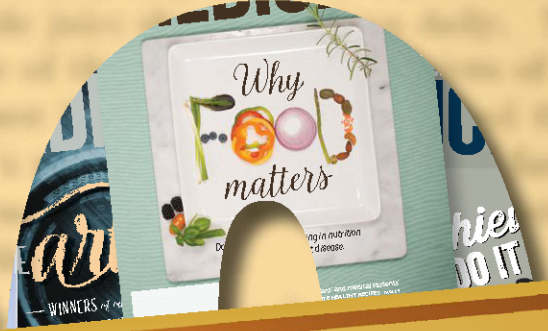
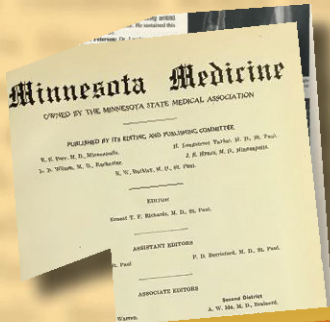


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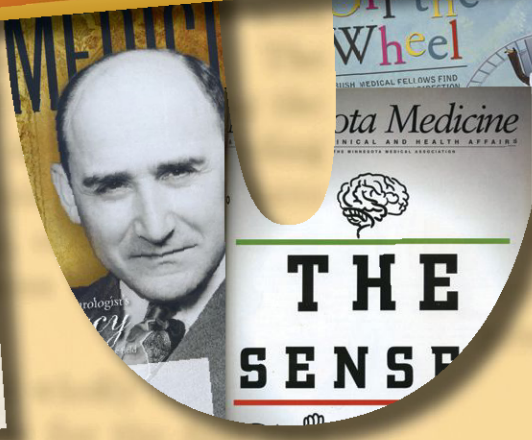
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100TH ANNIVERSARY ISSUE

Review of Literature
In 1962, French investigators reported that any alteration of parathyroid glands, a pair of small parathyroid glands in a patient treated with large doses of hyperparathyroidism for a number of years. At the University of Montreal, investigators from the University of British Columbia, Canada, demonstrated that administration to experimental animals of parathyroid extract from the parathyroid glands of these patients was inactive, long-term suppressive therapy.



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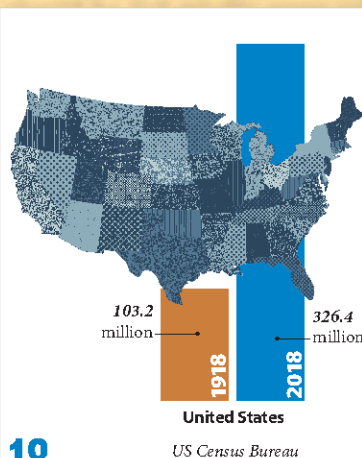
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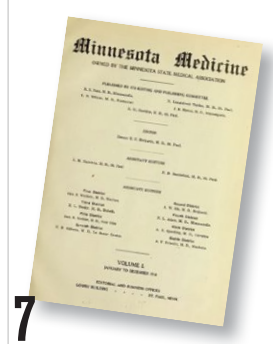
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MINNESOTA MEDICINE

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PHOTO BY SCOTT WALKER

Charles R. Meyer, MD, Editor in Chief

Today's *Minnesota Medicine* speaks to a specialized, technically sophisticated medical world.

One hundred years

I have a handful of patients who are 100-plus years old. Some reside in a nursing home, requiring daily help just to exist. Some live semi-independently but struggle with the ravages of creaking joints and failing memories. And some walk into the clinic with a confident step and a glint in their eye, full of wit and wisdom gleaned from their years of existence. One hundred years of life can maim, but it can also mellow.

Minnesota Medicine turns 100 this year, a ripe old age for any institution, particularly a publication. A descendant of the *Northwestern Lancet* and *The Minnesota State Medical Journal*, *Minnesota Medicine*'s first issue in January 1918 saw a world racked by a world war and decimated by a devastating influenza epidemic that would claim 477,000 lives in the United States that year. The inaugural issue of *Minnesota Medicine* began with an Editor's Note-like column entitled "Salutory of 'Minnesota Medicine' by the editing and publishing committee." Traditionally meaning a welcoming, a salutory can also imply the start of something. *Minnesota Medicine*'s 1918 salutory was a clear statement of the mission of the new journal. The publishing committee promised to "extend medical knowledge ... elevate the standard of medical education ... secure the enactment and enforcement of just medical laws ... [and] promote friendly intercourse among physicians." A tall order laid down by our forebears.

The first issue had articles describing orthopedic solutions to "incurable paralysis," condemning the use of castor oil in babies, opining that there is no such thing as bad breast milk and advocating tonsillectomy to cure "rheumatism." Perusing the issues of subsequent decades is a stroll through the missteps and giant leaps forward of medical science as the journal presented many

of the advances in medicine occurring in our state. The panoply of advertising seen in past issues is an engaging history in the changing attitudes of medical practitioners. Ads appeared for Camel cigarettes touting their "slow burning," which was said to be beneficial, and competing ads for Lucky Strikes claiming they were "less irritating." A 1943 ad for a girdle boasted that it would help enteroptosis, a curious condition meaning sagging intestines not currently covered in medical school but that, remarkably, has a Wikipedia entry. *Minnesota Medicine*'s history is a treasure trove of arcana and fascination.

In the past 30 years, the scientific content so prominent in the early life of the journal has faded, ceding space to political, economic and artistic aspects of medicine. The dense texts of the 1920s and 1930s have been replaced by articles enhanced by photographs and graphics. Likely the original editing and publishing committee would not recognize their journal and, perhaps, might not totally approve.

But today's journal speaks to a different world, a specialized, technically sophisticated medical world where scientific journals abound and a physician's time grows seemingly shorter as the extent of medical knowledge burgeons. Perhaps what the physician of 2018 needs more than anything is a humanistic perspective on medical knowledge, education and laws and readable coverage of topics not covered by the *New England Journals* of the world.

So as *Minnesota Medicine* becomes a mellow centenarian, I hope it will walk confidently into its next 100 years, passing on the glint in its eye with pages full of wit and wisdom. **MM**

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

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Tango is 'the real deal'

When she dances, Parvin Dorostkar, MD, is able to escape the demands of an intense profession and what she sees as a world that's too often filled with "fakes."

Dorostkar, a pediatric cardiologist and pediatric critical care physician, is, by her own admission, a complicated person. "I enjoy things that are difficult, complicated, loaded with variable interpretations and that are a huge challenge," she says. "I'm attracted to that in my career and I'm attracted to that in tango."

She first became acquainted with the tango while at a medical conference in Turkey. As part of the entertainment during a reception, professional dancers did the tango. "I was captured by the music and I wondered if I could do that, too—move like that," she says. She approached one of the dancers and suddenly he was walking the dance floor with her, doing tango steps.

"Tango found me, I didn't go looking for tango," she says. "It glommed onto me; like a sticky bug or a cancer that became a huge, overwhelming force in my soul."

After the experience in Turkey, she started taking classes and began dancing earnestly with more commitment and focus in 2006. Today, "I practice every day," she says. "During regular daily activities, in the bathroom, there is a little of this and a little bit of that I try to execute." She takes formal classes in Minneapolis several times a week. Tango has become more and more her life.

What is it about the tango that has captured her? "I think there's a pretense in this world, a certain superficial 'okay-ness,'" she says. "I find this boring and status quo. Tango craves authenticity and creativity. Every musical note, every movement and every shared feeling is unique in that moment, not to mention how variably you can interpret, execute and express its generated energy."

PHOTO BY MIKE KRIVIT



Parvin Dorostkar says she's complicated—and so is the tango. Losing herself in the dance helps her cope with a difficult and important work life.

Tango is therapy, Dorostkar says, and an opportunity to step away from the stress and weight of having patients, families and colleagues depend on your performance and know-how. In a competitive world where the primary drummer is money and power, she says, it is refreshing to have the opportunity to surrender to lamenting music while sharing it through movement with a partner.

"I hunger for that real deal stuff: inside the music and inside the experience," she says. "The rest of the world is full of pretense, false boasting, superficial commentary and superfluous small talk.

Inside the art of tango, you can unveil and express yourself without judgment because it all unfolds with your freedom of interpretation in the music and your partner's movements."

Dorostkar is intense when she describes what tango does for her: "It promises you feelings—if only for a moment—that are exquisite, human yet not human, beyond what I know on this earth. It's like an addictive drug—you seek to have more of it, all the time. But," she warns, "tango is not for



Want to experience tango?

Tango lessons are available through a number of organizations and instructors. The Tango Society of Minnesota www.mntango.org, is a nonprofit social club that promotes the Argentine tango in the Twin Cities. Its website offers links to group and individual lessons through a number of organizations, and has a packed calendar of tango events.

everyone. Unless you're willing to surrender to the music, to get inside the notes and melody or the moment and to forget about control, power or glitz and glamor, it becomes merely another dance form."

"I dance it for different reasons: muscle control, body awareness, emotional strength, mental excitement, relaxation, social engagement or relief of frustration and, most importantly, to experience what I consider uniquely human," she says. "I like being a technique junkie. When you tango well, you become one with your partner and the music, and, on a bigger scale, the world.

Tango is about giving and receiving, acknowledging, kindly suggesting, and humbly accepting. You melt into oneness."

In the years she's been dancing tango, Dorostkar has never had a regular partner; she dances with various people, from all walks of life at a *milonga*, or tango event. But finding people to dance with consistently is not always easy, she says. "I'm very good at sensing when someone is fake, insecure or pretentious. It's very hard to find people that are authentic and real, and it's even harder to connect with someone on that level. I seek and strive for real, authentic, organic connection; it's the truth for me. It is what gives me credibility, that I am alive as a human being and feeling." — LINDA PICONE

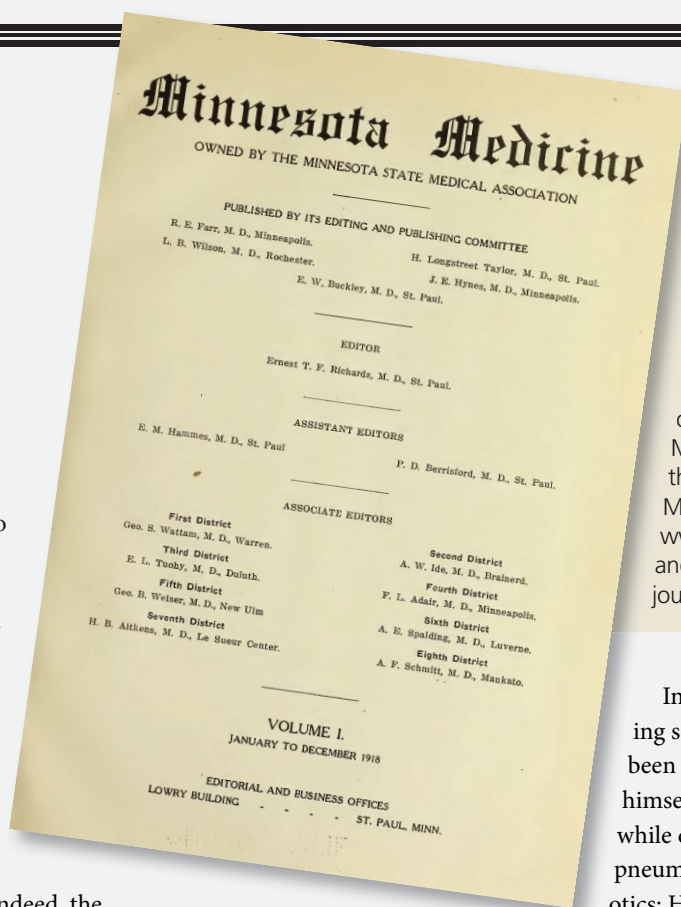
OUT OF THE STACKS

State medical journals now available in online library

Crack open a 100-year-old issue of *Minnesota Medicine* and you risk losing yourself in the yellowed pages. If you don't succumb to the long articles by authors with last names like Gillette and Mayo, then perhaps you will be caught up in the shorter reports, such as the one on sugar treatment for tuberculosis. You might be drawn in by the news that St. Paul physician Nellie Barsness is leaving for France to treat gassed soldiers or the ads for lakeside sanitarium, corsets and medicine containing creosote. Indeed, the 100-year-old medical journal is a temptress for even the mildly curious.

Until recently, few faced the risk, as copies of old state medical journals were hidden from view on dusty shelves. That has changed, thanks to the efforts of the Medical Heritage Library and the vision of physician and scholar Scott Podolsky, MD, who directs the Center for the History of Medicine at Harvard's Countway Library of Medicine.

As Podolsky assumed the position in 2006, a number of institutions, including his own, were beginning to digitize old medical books. To ensure they didn't duplicate each other's efforts, they formed the Medical Heritage Library, a collaborative effort of a number of universities and libraries to promote free and open access to historical resources in medicine.



Minnesota Medicine was not the first medical journal in Minnesota. Its forebears include the *Northwestern Lancet* (started in 1897), *Journal of the Minnesota State Medical Society* and *Northwestern Lancet* (1905), and *Journal-Lancet* (1912), all of which are also online at the Medical Heritage Library. To view these glimpses into medicine in Minnesota in earlier times, go to www.medicalheritage.org/content and select "state medical society journals."

In 2012, Podolsky began thinking seriously about an idea that had been brewing since he'd immersed himself in old state medical journals while doing research for a book on pneumonia treatment before antibiotics: He wanted to digitize them all and make them searchable. "There was

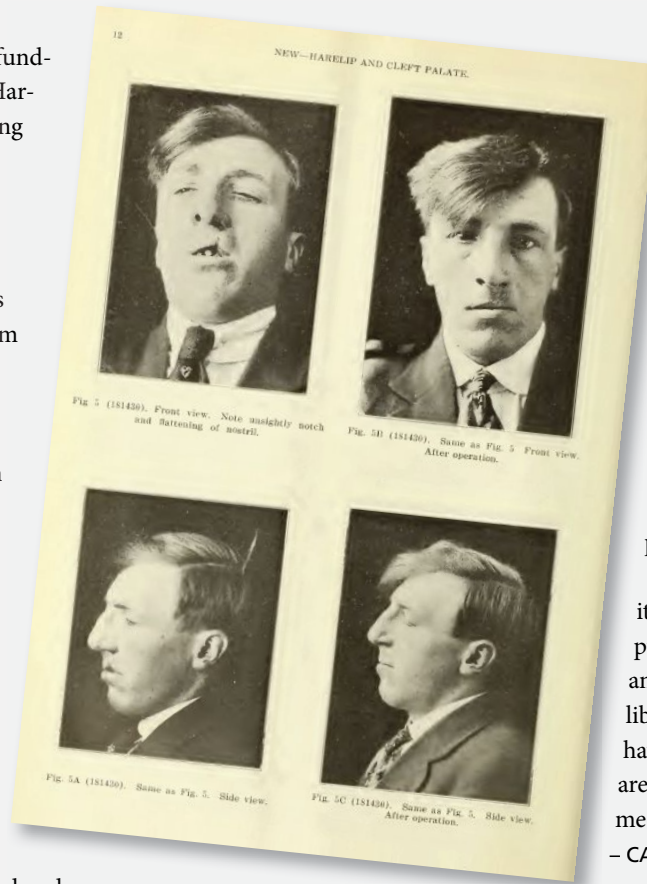
so much incredible information in the state medical journals, including *Minnesota Medicine*," he says. But it was difficult to access, sometimes requiring trips to other states.

He began by exploring whether it was even plausible to undertake such a project. For one thing, there was the issue of copyrights. They'd need permissions to reproduce anything published after 1923 (older publications are in the public domain). He called a few state medical societies, including the Minnesota Medical Association, asking if they'd grant that permission. Encouraged by the response, he and his MHL colleagues wrote a grant proposal to the National Endowment for the Humanities and then began formally contacting the organizations in every state that had ever published a medical journal. In 2015, with

funding in place (augmented by funding from the Arcadia Fund and Harvard Medical School), the scanning began.

Today, journals from 48 states plus Puerto Rico and the District of Columbia are freely accessible on the Medical Heritage Library’s website. There aren’t journals from all 50 states because New Hampshire never had a journal and the *New England Journal of Medicine* (Massachusetts) has already been digitized.

Most of the state journals, including *Minnesota Medicine*, started in the early 20th century. “It’s when the AMA started accumulating prestige and power, so state medical societies on their own likewise started developing their own prestige and influence,” Podolsky explains. They evolved as medicine became more specialized and



specialty journals proliferated. “I think the journals’ chief remaining function is news about the profession within the state itself and state initiatives,” Podolsky says.

Podolsky and his colleagues have about 100 missing issues to track down and then their vision will be fully realized. When it is, he plans to spread the word in earnest about the online resource. “My intention is to contact every state medical society and say, ‘Thank you very much. Now please go ahead and use this.’”

As for the Medical Heritage Library, its next hoped for project is to digitize public health pamphlets from the 19th and 20th centuries. Podolsky says major libraries have “boxes and boxes” that haven’t been fully catalogued, so they are invisible to researchers—just as state medical journals were not so long ago.

– CARMEN PEOTA



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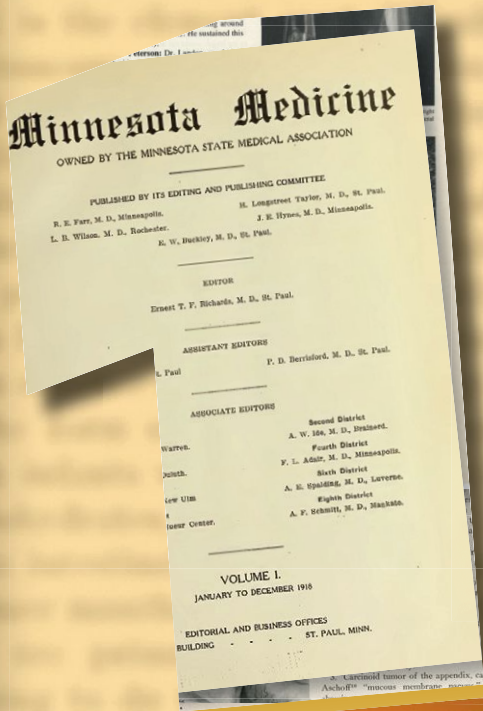
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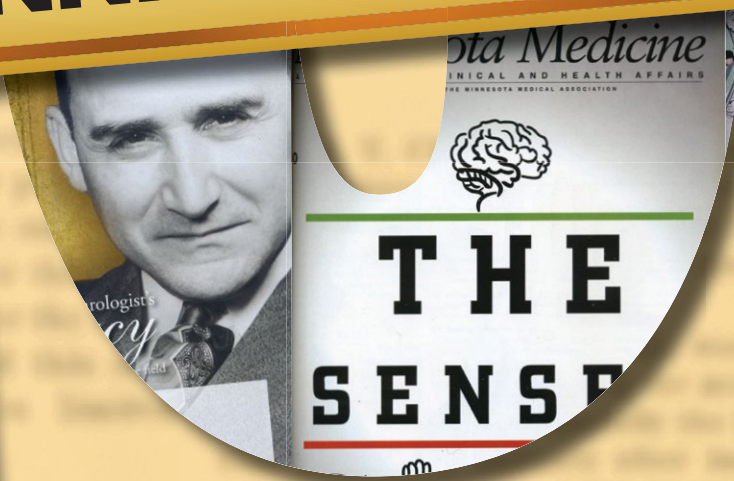
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1918-2018



100TH ANNIVERSARY ISSUE





A CENTURY OF MEDICAL PROGRESS

Although far from the famed academic centers on the East Coast—an especially important factor in the days before rapid transportation and information exchange were available—Minnesota has made a mark on medicine in the United States and elsewhere. The state's medical institutions, practitioners, researchers and inventors often emerged as leaders in everything from medical education and training to revolutionary surgeries to new treatments to public health initiatives.

Minnesota Medicine published its first issue in 1918. In this centennial year, we look at some of the advances and challenges in medicine and public health the state has seen.

BY TIM BRADY

1918

Flu pandemic challenges public health strategies

The greatest influenza pandemic of the 20th century hit Minnesota in the last week of September 1918. The precise origins of the influenza remain unknown, but the fact that it coincided with the last year of World War I ensured that troops traveling to and from encampments in the United States and Europe were unwitting yet efficient carriers of a virus that, by the

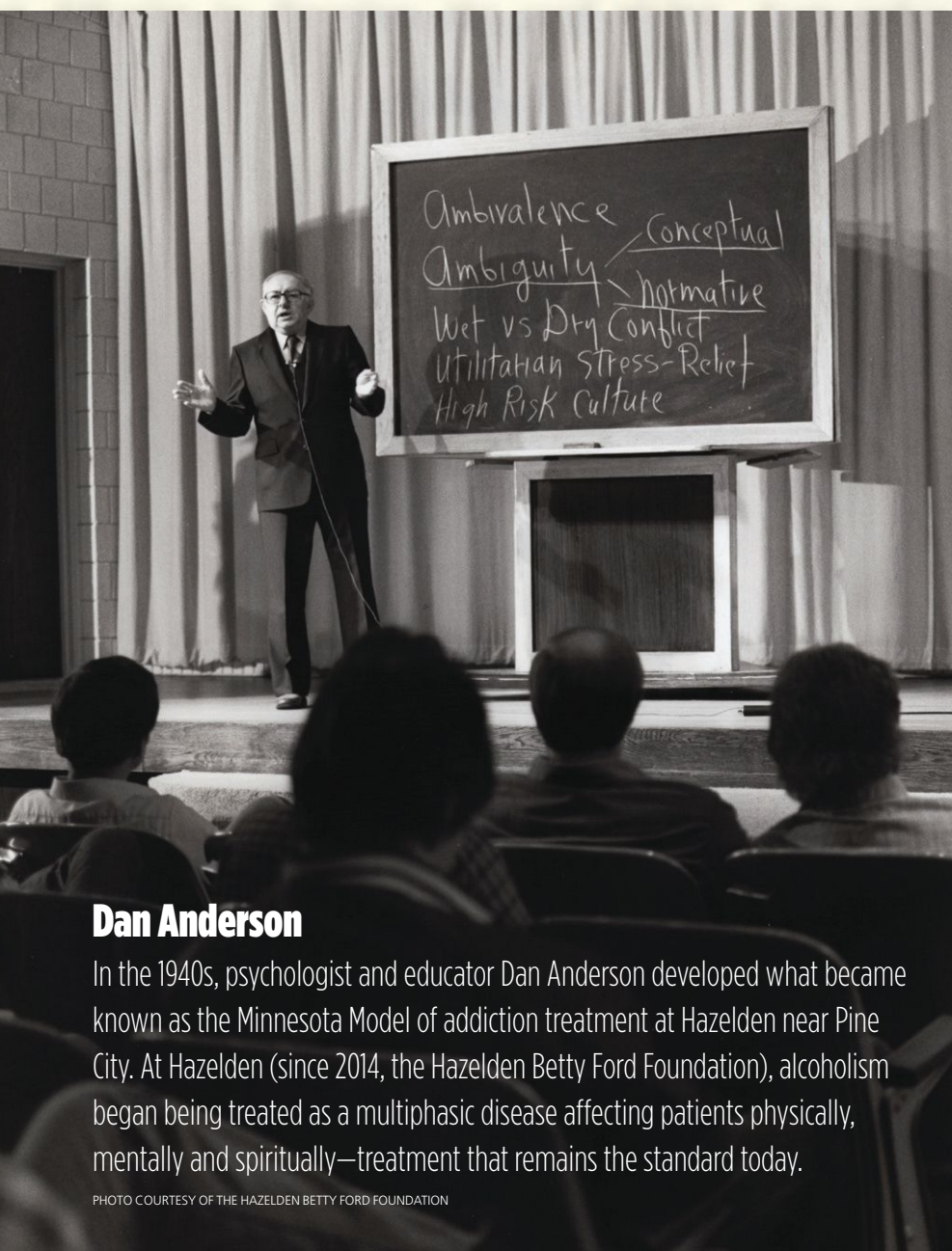
time it had run its course two years after it first appeared, would kill 50 million people across the globe and as many as 12,000 in Minnesota. Unsurprisingly, the illness first reared its head in Minnesota where military recruits and draftees were stationed at Fort Snelling and on the campus of the University of Minnesota.

The so-called Spanish flu virus quickly spread to the civilian population and the number of ill citizens overtook that of infected military personnel by the second week of October. Medical personnel in the state, already stretched thin by the demands of war service, were overwhelmed

by the fast-growing numbers of sick flooding into hospitals.

In Minneapolis, public health officials were quick to advocate broadly proactive measures for slowing the spread of the disease, specifically closing public places, including schools. St. Paul health officials argued that it was best to attack the epidemic on an individual level, by isolating and caring for the diseased. Closing schools would be detrimental to stopping the spread of the influenza because it would hide victims from identification and treatment.

A 2007 Public Health report on the pandemic noted: “While the actions that the two city health departments took to stem the spread of influenza align closely with current pandemic plans, health officials had the disadvantage of trying to conceive and realize plans during a health crisis.”



Dan Anderson

In the 1940s, psychologist and educator Dan Anderson developed what became known as the Minnesota Model of addiction treatment at Hazelden near Pine City. At Hazelden (since 2014, the Hazelden Betty Ford Foundation), alcoholism began being treated as a multiphasic disease affecting patients physically, mentally and spiritually—treatment that remains the standard today.

PHOTO COURTESY OF THE HAZELDEN BETTY FORD FOUNDATION

1930s–1940s

Blood banks change medicine

The creation of the blood bank is one of the great unsung inventions of modern medicine. Early experiments in blood transfusion, in the first years of the 20th century, had been hampered by the difficulty of storing blood and preventing coagulation. The needs of battlefield surgeons in the World War I prompted improvements in finding anticoagulant agents and storage techniques, but in 1935, John Lundy, MD, assumed responsibility for all transfusions at the Mayo Clinic. At the time, transfusions were done directly between patient and donor; improvements in intravenous access techniques led to a greater need for blood and the requirement for stored blood. Bernard Fantus, MD, at Cook County Hospital in Chicago is usually credited with creating the first laboratory to collect, preserve, refrigerate and store donor blood for patient use in a hospital, and with inventing the name “blood bank”; but it was Lundy who began storing blood in a cooler at the Mayo Clinic in 1935.

In 1942, the Red Cross opened blood banks in St. Paul and Minneapolis. Even

before the St. Paul center had opened, 3,500 people volunteered to give blood and more than 500 pints were collected for the war effort in the first week, more than twice the projected quota. In 1948, both St. Paul and Minneapolis established regional blood centers as part of the effort by the American Red Cross to create a nationwide civilian blood program. At the University of Minnesota, a blood bank not only served the needs of general hospital patients but also helped keep the growing surgical department supplied with its sometimes vast needs for blood.

Ellis Benson, MD, of the University School of Medicine headed the blood bank at the University lab for a number of years. In a 2009 interview, he remembered the difficulties of having to tell the renowned-surgeon Owen Wangenstein—a man used to getting what he wanted, including all the blood he could find for his surgeries—that he had to temporarily close the blood bank because the surgical department had exhausted not only the University's supply of blood, but that of the St. Paul and Minneapolis banks, as well.

1935–1940s

Minnesota Model for addiction born at Hazelden

Treatment for alcoholism and chemical addiction had a long and mixed history up to the middle of the 20th century. The disease model of alcoholism was suggested by Benjamin Rush as early as the late 18th century in Philadelphia; community support groups as a basis for alcoholic treatment were said to be a part of some Native American tribes at about the same time. These “sobriety circles” were led by tribe members who had battled their own demons and encouraged abstinence-based recovery. Still, the greatest numbers of alcoholics and drug addicts were treated in asylums or sanatoria through the 19th and well into the 20th centuries, or they were left to their own devices to battle their addictions through temperance and abstinence movements.

In 1935, an alcoholic named Bill W. met a fellow alcoholic named Dr. Bob and the two began a fellowship, which eventually spawned Alcoholics Anonymous, a worldwide recovery movement based upon the palliative effects of alcoholics meeting to discuss their struggles with their addiction. Eventually, a 12-step program was established that began with an alcoholic's admission of powerlessness in the face of addiction. But alcoholics and addicts were essentially left to their own devices in battling the disease at the same time as they struggled with the stresses of their daily lives.

In the late 1940s, a group of Minnesotans built a center on a farm outside of the Twin Cities to provide a remove for alcoholics to work on their addictions in an atmosphere that emphasized the dignity of the individual even as it insisted upon the personal responsibility of each to work on his or her own illness. The Minnesota Model of treatment—a 12-step program conducted in contemplative surroundings with a focus on helping patients achieve sobriety and stay sober without the shame and stigma attached to previous means of treatment in hospital wards or the sanatorium—made Hazelden, the farm near Pine City where the center was built, a watchword for the best in alcoholic treatment. Here alcoholism could be treated as a multiphasic disease affecting patients physically, mentally and spiritually. It could be addressed by multiple health professionals including counselors, physicians, psychologists, social workers, clergy and therapists. No other facility had developed such a widespread means of treating addiction. Today, almost 70 years later, it remains the standard for alcoholic treatment.

1940s

New chemical agents aid war against TB

Tuberculosis (TB) is a devastating disease that profoundly affected millions of lives around the globe; in the United States alone, 70,000 people were killed annu-

ally as late as the 1940s (compared to 500 today). At its peak in Minnesota, the disease killed 2,543 people (1918) and there were 14 county sanatoria, one state facility and two private institutions to isolate and care for its victims. Hundreds of sanatoria across the country were filled with TB patients, who were kept isolated.

The discovery of penicillin in 1928 by the Scottish scientist Alexander Fleming was the first great milestone in the march of antibiotics into the future—although sulfa drugs remained the main treatment until the 1940s. The next marker was much closer to home in Minnesota.

Early in the 1940s, two Mayo researchers, William Feldman, MD, and Corwin Henshaw, MD, became interested in testing chemotherapeutic agents that might be effective against the scourge of tuberculosis. It wasn't until 1943, when Feldman and Henshaw contacted Selman Waksman and Albert Schatz, scientists at Rutgers University, that they found a compound that showed real promise against TB: streptomycin. After several trials with guinea pigs at their Mayo lab, in October 1944, Feldman and Henshaw found a human patient with advanced TB who gave her consent to be tested with the new drug. By the following spring, her TB had receded to the point that doctors were able to remove the remaining diseased portion of lungs through surgery and the woman lived for several decades.

Waksman won a 1952 Nobel Prize in Medicine for his discovery of streptomycin. At Mayo, Feldman contracted the disease himself in 1948, either from a patient or through his own experiments, and was successfully treated with streptomycin. He continued his work at the clinic through the 1950s.

1948

Cortisone offers ‘miraculous’ pain relief for arthritis

Arthritis is roughly as old as mankind and medical practitioners have sought ways of treating it for nearly as long. In the East,



Open-heart surgery pioneers

C. Waltron Lillehei, MD, was one of the groundbreakers in open heart surgery, doing the first successful open heart repair at the University of Minnesota in 1952. In 1954, he used a donor to cross-circulate blood with the patient in order to perform a successful open heart surgery.

PHOTO COURTESY OF THE UNIVERSITY OF MINNESOTA

the ancient method of acupuncture was used in part to address the pain and discomfort of rheumatoid arthritis; while in the West, the use of heavy metals, particularly injections of gold, showed indications of reducing pain and inflammation. Aspirin, invented in the late 1890s, offered pain relief, but often not enough.

In 1948, a 29-year-old Minnesota woman arrived at Mayo with a case of rheumatoid arthritis so debilitating that her joints were immobile. She was admitted to the Clinic and treated with an injection of an experimental drug known by its makers, Edward Kendall, a biochemist, and Philip Hench, a rheumatologist, sim-

ply as Compound E. After two days and three more injections, she not only left the hospital on her own two feet, she spent the next three hours shopping in Rochester.

Over the next seven months, Hench and Kendall gave the same compound to 30 more patients and all had similarly “miraculous” results. A few months later, Hench gave the compound a name, Cortisone, and a new wonder drug was born.

Of course the drug was “born” after years of research and testing, stretching back to the late 1920s, much of it centered around isolating hormones from bovine adrenal glands culled from the stockyards of Chicago. Cortisone and its synthetic

replicates have proved to be the most widely used and effective means to treat autoimmune diseases today.

Kendall and Hench shared the 1950 Nobel Prize in physiology with a Swiss scientist who was working on a concurrent project. (Kendall was also responsible for another Minnesota “first”—the identification and purification of thyroxine, the hormone produced by the thyroid gland.)

1940s–1950s

University of Minnesota a leader in pioneering heart surgeries

For much of history, operating on the heart was thought to be impossible. Surgeons and technicians puzzled over whether and how to develop a machine that would allow surgeons to stop the heart long enough to successfully operate on the organ.

The development of groundbreaking heart surgery techniques and heart surgeons at the University of Minnesota in the

1940s and '50s began with Owen Wangensteen, chief surgeon for 37 years. Wangensteen helped bring world-renowned talent like heart transplant pioneers Norman Shumway and Christian Barnard, who performed the first heart transplants in history, to the University. Also on that list of groundbreakers were Walton Lillehei, who completed the first successful open heart repair in 1952, and F. John Lewis. Lillehei and Lewis induced hypothermia to cool a patient's body enough to stop the heart in order to perform surgery. Lillehei later used a cross-circulation technique, hooking his patient up to a donor, to successfully perform another open-heart surgery in 1954. Neither method was optimal for difficult surgeries that required lengthy amounts of time on the operating table.

The development of a machine that would allow surgeons to stop the heart long enough to successfully operate on the organ itself was essential and it, too, was being worked on at the University.

In 1935, Clarence Dennis, a St. Paul native, returned to Minnesota after receiving his medical degree from Johns Hopkins University. He began a surgical residency under Wangensteen at the University but soon found himself drawn to surgical lab research. After the war, as the University surgical unit was beginning to experiment with open-heart surgery, Dennis was urged to work on a pump-oxygenator device that would maintain blood circulation long enough to allow for heart surgery. He contacted and exchanged ideas with a Philadelphia doctor, John H. Gibbon, who had been experimenting with a similar machine for a number of years. By 1951, Dennis was ready to test his machine on a human patient. The pump-oxygenator worked well in surgery, but the 6-year-old on whom he operated died when her heart condition was discovered to be worse than diagnosed. Richard DeWalt, MD, who ultimately created the first workable, heart-lung bubble oxygenator in 1955, was also educated under the supervision of Wangensteen.

Beyond the surgical success stories themselves were lasting effects on the healthcare industry. Work on the tools

and devices needed to supplement and sustain the work of Minnesota doctors in heart surgery and other medical fields created industries that would reshape the economic landscape of the state. The best known example is the creation of the pacemaker by a local electrical engineer named Earl Bakken, a friend and acquaintance of Lillehei. Bakken was asked by the surgeon if he could develop a small, practical, battery-operated pacemaker for Lillehei's patients. The resulting invention was enormously effective and would help Bakken found the medical instruments giant, Medtronic.

1950s

Sister Kenny offers revolutionary therapy for polio—and vaccine conquers the disease

For much of the 20th Century, polio was one of the most feared diseases in the industrialized world. An infectious virus that attacks its victim's brain and spinal cord, polio often resulted in muscle weaknesses and paralysis. While the disease and its effects were known throughout the world, polio became a graver menace beginning in the early 20th century when



Sister Kenny

Sister Elizabeth Kenny, an Australian nurse, brought her then revolutionary technique for treating polio victims to Minnesota in the 1950s. Instead of confining patients in leg braces, she encouraged them to relearn how to use their muscles through exercise and hot packs.

PHOTO COURTESY OF THE MINNESOTA HISTORICAL SOCIETY

periodic outbreaks reached pandemic levels, culminating in a 1952 epidemic, the worst in U.S. history. Minnesota had 4,131 cases and 221 deaths that year, which was more than any other state.

At the height of the mid-century outbreaks, Minneapolis was visited by Sister Elizabeth Kenny, an Australian nurse, known for her groundbreaking techniques in treating polio victims, particularly children. The standard treatment had been to confine patients in leg braces, the more rigid, the better. Kenny's idea was simply to encourage patients to relearn to use their limbs through gentle movement, careful exercise, and hot packs. She found a receptive audience for her treatments in Minnesota with a local orthopedist, John Pohl, MD, and a prominent physician at the University of Minnesota, Miland Knapp, MD. In 1942, Kenny opened a clinic with initial funding provided by the Minneapolis Board of Public Welfare. The clinic soon became an institute funded by the Sister Kenny Foundation and merged with the Abbott-Northwestern Hospital Corporation; today it is the Courage Kenny Rehabilitation Institute, a part of Allina Health. The principles behind her treatment helped develop the science and practice of physical therapy.

In 1955, Jonas Salk announced that his University of Pittsburgh lab had produced a vaccine for polio; it soon went into wide production to meet a huge demand. In just two years, 100 million doses of the Salk polio vaccine had been distributed over the United States with few complications. Over the next 25 years, the polio virus would be virtually eradicated, with global incidence in the double digits, rather than hundreds of thousands.

1951

Physicians gain power over how drugs are sold

The distinction between over-the-counter and prescription medications was for many years governed by the manufacturer of the drug, which could lead to occasions

where individual drugs were deemed safe for over-the-counter sales by one maker and not by another. The consumer was the arbiter of the efficacy of the drug.

In 1951, Congress passed the Durham-Humphrey Amendment, co-sponsored by Senator Hubert H. Humphrey, one of Minnesota's most well-known political figures. It created two distinct categories of medication: prescription and over-the-counter. Until the law was created, no distinction was made between drugs requiring a prescription and those that were sold directly from a drugstore shelf. Humphrey's background as a South Dakota pharmacist no doubt piqued his interest in the legislation. The bill required that any medication that might be habit-forming or potentially dangerous to its user needed to be dispensed under the prescription of a medical practitioner and to carry a printed warning: "Caution: Federal law prohibits dispensing without prescription."

The new regulation led to an increased dependence on the medical profession, with doctors given the power to prescribe medications to consumers who had previously governed their own drug usage.

1950s—today

Minnesota leads anti-smoking efforts

The state of Minnesota has long been in the forefront of efforts to curtail smoking and publicize the hazardous effects of tobacco. In 1975, it enacted the Clean Indoor Air Act, making the state the first to ban smoking in most public spaces and to require restaurants to create no-smoking areas. In 2007, it passed the Freedom to Breathe Act, which banned smoking in restaurants and bars throughout the state.

The medical and scientific community in Minnesota took on the battle against smoking. In its earliest days, the fight was led by Leonard Schuman, MD, who headed the University of Minnesota's division of epidemiology within the School of Public Health from the mid-1950s until his retirement in 1983.

By the late 1950s, a growing body of research had linked smoking to a host of health-related issues, most notably, at the time, lung cancer. Numerous health-related organizations appealed to President John F. Kennedy and his surgeon general in 1961 to organize a conference to do a definitive study of the matter and make recommendations. Schuman became an instrumental member of the 10-person committee, which reviewed more than 7,000 articles and interviewed 150 experts on health and smoking. The results became the famed 1964 Surgeon General's Report on Smoking, which had an enormous impact on the use of tobacco in the country. Not only did it prompt the first Surgeon General's Warnings to be stamped on packages of cigarettes, it also curtailed tobacco advertising on television and radio and, perhaps most importantly, alerted the public to the grave dangers of tobacco use. Lung cancer was shown to be nine or 10 times more likely in smokers than non-smokers; smoking during pregnancy reduced the weight of infants; and overall smoking accounted for a 70-percent increase in mortality rates for smokers vs. non-smokers.

In 1998, the state of Minnesota received a \$6.5 billion settlement with tobacco companies to cover costs incurred by Blue Cross Blue Shield of Minnesota in caring for smoking-related health problems. It was the first successful suit brought by an individual state against the companies, which had previously settled jointly with 40 states attorneys general. The money helped pay for Medicaid costs related to smoking, as well as smoking cessation programs. It also severely restricted cigarette marketing in Minnesota.

1970s—today

HMOs offer a way to deal with healthcare costs

By the 1960s, many of the nation's persistent healthcare problems were already emerging. The cost of medicine was rising due to increases in expensive procedures and the neglect of preventative practices. Patients were shifting from one doctor to the next or

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Smoke a
FRESH
cigarette"**

If the cigarette you have been smoking stings or burns your throat, switch to Camels and see the difference.

It's the peppery dust left in tobacco by inefficient cleaning methods that makes you cough.

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There is no peppery dust in Camels—that's whisked away by a special vacuum-cleaning process.

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This scientific germ-safe wrapping—not plain ordinary Cellophane, but moisture-

proof Cellophane which costs nearly twice as much—seals in all the natural aroma and freshness, seals it so tightly that wet weather cannot make Camels damp, nor drought weather make them dry.

Camels are milder and more throat-friendly because they are dust-free and fresh.

Give your throat a vacation, switch to Camels for just one day. Then leave them—if you can.

Tune in CAMEL QUARTER HOUR featuring Morton Downey and Tony Martin — Camel Orchestra, directed Jacques Renard — Columbia System—every night except Sunday



CAMELS
Mild... NO CIGARETTE AFTER-TASTE

HUMIDOR PACK
Smokes a fresh cigarette

Don't remove the moisture-proof wrapping from your package of Camels after you open it. The Humidor Pack is protection against dust and germs. In offices and homes, even in the dry atmosphere of artificial heat, the Humidor Pack delivers fresh Camels and keeps them right until the last one has been smoked

Smoking in Minnesota

Minnesota was an early leader in recognizing the dangers of smoking and in acting to curtail the use of tobacco. It was the first state to successfully sue tobacco companies for smoking-related health problems. In the mid-20th century, however, ads like this seemed to offer the endorsement of medical professionals for various brands of cigarettes.

PHOTO COURTESY OF THE COLLECTION OF STANFORD RESEARCH INTO THE IMPACT OF TOBACCO ADVERTISING

dropping out of the healthcare system entirely when costs became prohibitive.

Health Maintenance Organizations (HMOs) were envisioned as a way to offer consumers a choice of competing health care options at reasonable prices. Groups of doctors would join together to offer their services to patients on a prepaid basis rather than a fee-for-service arrangement. Costs of medicine would be driven down by the impetus of these organizations to compete on price and quality.

One of the chief promoters of the concept was a University of Minnesota physician, Paul Ellwood, MD, who also served

for many years as director of Sister Kenny Institute in Minneapolis. Ellwood, who has been called “the father of the health maintenance organization” (he actually gave HMOs their name), was invited to Washington by President Richard Nixon in 1970 to help map out reforms in the way healthcare was managed. The result of this consultation and the work of the administration, Congress, and health and human services officials was the creation and passage of The Health Maintenance Organization Act of 1973. The legislation provided grants and loans to start HMOs. It also minimized state-imposed

restrictions on healthcare organizations like these. Perhaps most importantly, it required businesses with more than 25 employees to offer federally certified HMO service opportunities upon request. This last stipulation helped popularize the HMO system—which ultimately turned these well-meaning healthcare organizations into large corporate entities.

Over the years, HMOs have been faced with many criticisms. Some contend that the original intent of providing cost-effective service for consumers and a means for doctors to provide preventive and ongoing care for their patients has too often been replaced by healthcare decisions made at the demand of shareholder interest rather than patient need. Whether for-profit or non-profit institutions provide better managed healthcare remains a topic of debate up to the present. Minnesota continued to ban for-profit HMOs—it was the last state to do so—until the 2017 legislative session, when that 40-year-old clause in the law was eliminated. **MM**

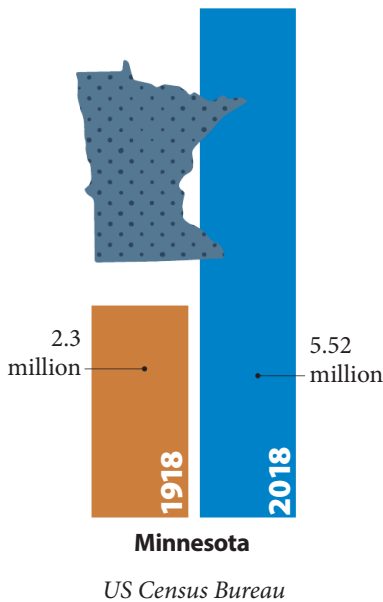
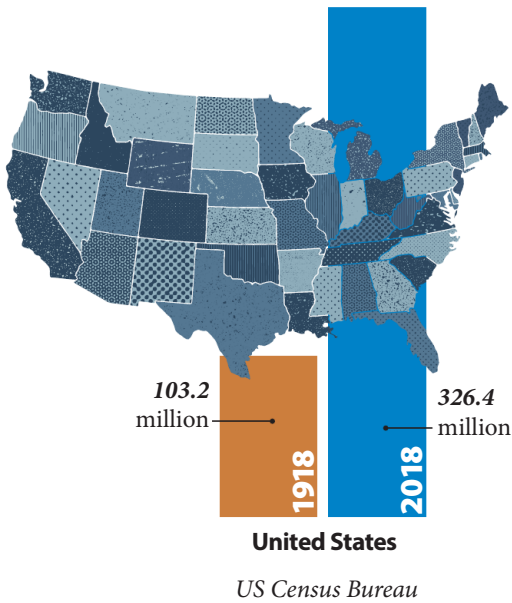
Tim Brady is a Twin Cities freelance writer.

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AND

NOW

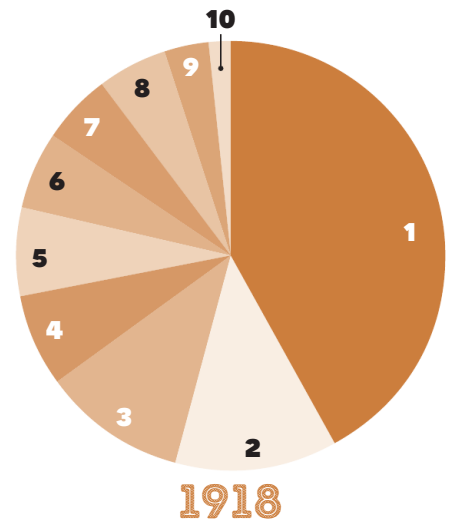
POPULATION



LEADING CAUSES OF DEATH

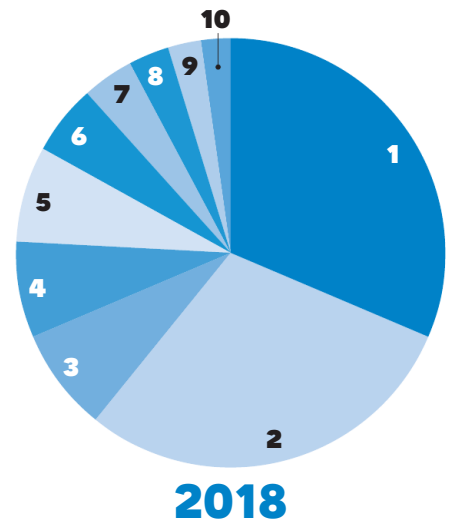
- 1 Pneumonia (all forms) and influenza 588.5*
- 2 Diseases of the heart 171.6
- 3 Tuberculosis (all forms) 149.8
- 4 Nephritis (all forms) 97.4
- 5 Intracranial lesions of vascular origin 94.0
- 6 Cancer and other malignant tumors 80.8
- 7 Accidents excluding motor-vehicle 73.2
- 8 Diarrhea, enteritis and ulceration of the intestines 72.2
- 9 Premature birth 47.3
- 10 Puerperal causes (total) 22.3

*rates are per 100,000 population



- 1 Heart disease 197.2*
- 2 Cancer 185.4
- 3 Chronic lower respiratory diseases 48.2
- 4 Accidents (unintentional injuries) 45.6
- 5 Stroke (cerebrovascular diseases) 43.7
- 6 Alzheimer's disease 34.4
- 7 Diabetes 24.7
- 8 Influenza and pneumonia 17.8
- 9 Nephritis, nephrotic syndrome and nephrosis 15.5
- 10 Intentional self-harm (suicide) 13.7

*rates are per 100,000 population



National Center for Health Statistics, Centers for Disease Control and Prevention

LIFE EXPECTANCY

1918*	2018
MEN	MEN
36.6	76.3
WOMEN	WOMEN
42.2	81.2



*The flu epidemic had a dramatic effect on life expectancy in 1918; it dropped from 48.4 for men and 54.0 for women in 1917—and rose significantly in 1919 to 53.5 for men and 56 for women.

National Center for Health Statistics, Centers for Disease Control and Prevention

HOUSEHOLD SIZE

1918	2018
3	2.53

(down from 5 in 1901 due to war and flu)



HEIGHT (INCHES)

1918	2018
MEN	MEN
67.5	69.2
WOMEN	WOMEN
62.4	63.7



MORTALITY RATE (PER 1,000)

1918	2014
UNITED STATES	UNITED STATES
18.0	8.2
MINNESOTA	MINNESOTA
13.4	1.4

Centers for Disease Control



WEIGHT (POUNDS)

1918	2014
MEN	MEN
134-161	195.7
WOMEN	WOMEN
113-132	168.5



BIRTHS

1918	2016
1.4 million	4.0 million
BIRTH RATE	BIRTH RATE
119.8/1,000	12.4/1,000
INFANT MORTALITY IN MINNESOTA 2009-2013	INFANT MORTALITY NATIONWIDE 2009-2013
4.8/1,000	5.9/1,000



*CDC & National Center for Education Statistics
Minnesota Department of Health*

HIV/AIDS ORAL HISTORY PROJECT

Capturing history

HIV/AIDS Healthcare Providers Project documents the evolution of caring for those affected in Minnesota

BY SUZY FRISCH

When HIV/AIDS hit Minnesota in the 1980s, it was a death sentence. Those affected got extremely ill and died quickly. Thanks to misinformation about the disease and significant stigma, there was initially little in the way of support from the community.

Yet some medical providers, organizations, community groups and individuals stepped up and did everything they could to help. That often meant scraping together resources and fighting their own employers to take care of very sick people while trying to prevent others from getting infected.

People involved in HIV/AIDS care during the past 35-plus years have shared many unique experiences from the front-lines, as the disease evolved from terminal to chronic. Emil Angelica, president of the Community Consulting Group in Minneapolis, who works with many health

nonprofits, came up with the idea of documenting these endeavors and learning from them.

What would happen to all that collective knowledge, he wondered, as doctors, nurses, social workers, nonprofit leaders and other individuals retire?

Starting in 2011, Angelica pulled together a team, funding and partners to launch the HIV/AIDS Healthcare Providers Project in Minnesota. He developed a three-phase initiative to create a record of this time through an oral history project, followed by a research report and community engagement efforts about the team's findings and learnings.

"I was starting to see leaders retire and move on, and I realized we would lose that history of their experience," Angelica says. "I observed all of this and thought, 'This is a project we ought to do.'"

Angelica recruited oral historian Barbara Sommer, public health specialist Peter Carr and historian Andrea Klein Bergman. Together, they conducted interviews with 35 people involved in HIV/AIDS care from the early 1980s to the present, backed by two rounds of funding from the Minnesota Legacy Amendment.

An advisory council made up of HIV/AIDS caregiving and support providers helped the team develop a diverse cadre of potential interviewees, including physicians, nurses, public health professionals, pastoral care workers, community organizers, educators and advocates from the Twin Cities and Greater Minnesota.

The group conducted interviews until 2016 under the guidance of Sommer. She arranged for the oral histories to be archived and available to peruse at the University of Minnesota Libraries' Jean-Nickolaus Tretter Collection in Gay, Lesbian, Bisexual and Transgender Studies.

The team then secured funding from 30 community members and the Jay & Rose Phillips Family Foundation to complete a report about macro findings from the oral



histories. The report summarizes and analyzes the many themes that came from the interviews and delves into lessons learned.

Next, Angelica aims to engage the community through events, exhibits or other media about HIV/AIDS history and these lessons. The team wants to explore how its learnings

could be applied to other infectious diseases, especially those with a stigma like Ebola or Zika, says Carr, who is the retired state AIDS director for the Minnesota Department of Health.

Angelica wasn't surprised to learn from the oral histories that this stigma affected the community's ability to garner early support for people with HIV/AIDS. "The stigma caused us as a community to not respond to the disease the way we might have to another disease and use what we know works in public health," he says.

Sommer was struck that most people got involved with HIV/AIDS care through a personal connection to the disease—a friend, patient or relative. The role of such individuals was key. Solo medical providers, social workers and nonprofit staff would convince their employers to help people who often were fighting HIV/AIDS alone.

These caregivers knit together an informal network that provided housing, meals, medical care, referrals and more in the early days, before much government funding went to people with HIV/AIDS. "Across the board, it stood out to me how compassionate and self-driven people were in taking the initiative to make things happen," Carr says. "The initial response was quite remarkable."

Another finding and lesson was the importance of various communities—such as African American, Native American, immigrant and gay—to developing specialized outreach, care and prevention with input from within, Sommer says. These approaches continue to meet groups' unique needs and cultures instead of being



"I was starting to see leaders retire and move on, and I realized we would lose that history of their experience. I observed all of this and thought, 'This is a project we ought to do.'"

– Emil Angelica, president, Community Consulting Group

one size fits all and potentially less effective.

From a public health perspective, much can be applied to future disease outbreaks, Carr says. Providing accurate information is key, as is effectively monitoring and tracking where the outbreaks are occurring. That way a region can mount a public health response, including treatment, containment and prevention. It's also critical to get on top of new diseases early with resources, funding, tracking and communication, he says.

The HIV/AIDS project has been a labor of love for the researchers, who are

motivated to capture this moment in history before it's too late. "I lived through the time when HIV/AIDS was basically a death sentence. Now we're in a place where people are living for a long time with the disease. Yet it isn't over," Angelica says, adding that many communities still are being disproportionately affected by HIV/AIDS.

"What is the end game? What decisions have to be made at this point? We need to look at our history to influence our path going forward." MM

Suzy Frisch is a Twin Cities journalist and writer.



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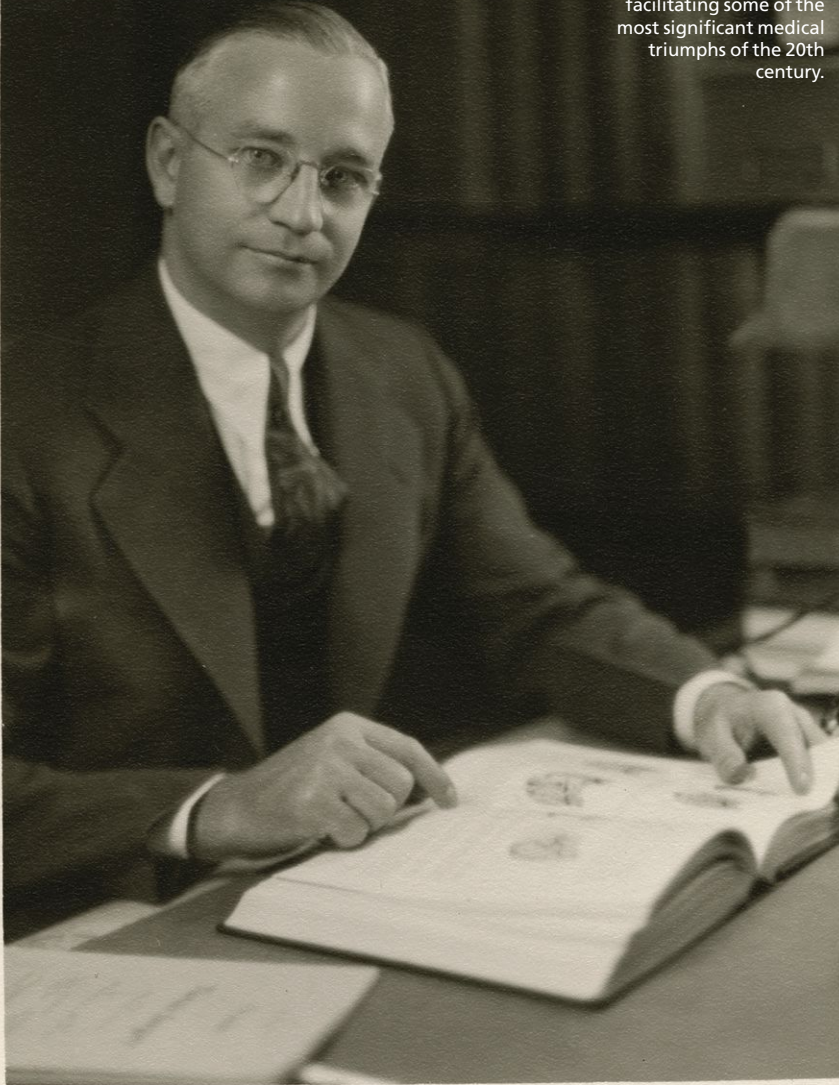
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Owen Wangenstein served as chair of the Department of Surgery at the University of Minnesota for 37 years, making it a leader in surgical research and facilitating some of the most significant medical triumphs of the 20th century.



The Department of Surgery at the University of Minnesota is best known for the development of open-heart surgery, the invention of the pacemaker and the emergence of Minnesota's thriving medical device industry known as Medical Alley. Today, these remarkable events are celebrated at the National Museum of American History in Washington D.C.

While leading Minnesota figures in cardiac surgery—F. John Lewis, C. Walton Lillehei and Earl Bakken, to name a few—have been honored, much of the credit is also attributed to the singular leadership of department chair Owen Harding Wangenstein, who served as the department's charismatic leader from 1930 to 1967.¹ Fostering an atmosphere that emphasized the need for surgical science, he encouraged surgeons to develop active research agendas in the laboratory. The focus on surgical research and its integration into medical education yielded many important contributions to mid-century surgery beyond cardiology's impressive results.

Wangenstein presided over an active research program that included the development of nasogastric suction to manage the surgical complications of bowel obstruction and Henry Buchwald's work on cholesterol metabolism and development of bariatric surgery. Moreover, during the Wangenstein era, the stage was set for the pioneering organ transplant work that followed under John Najarian's tenure as chair during the 1970s. Wangenstein also supported the work of surgeons such as William Bernstein and Stanley Goldberg,

Beyond cardiac surgery

Owen H. Wangenstein and the University of Minnesota's contributions to mid-century surgical science

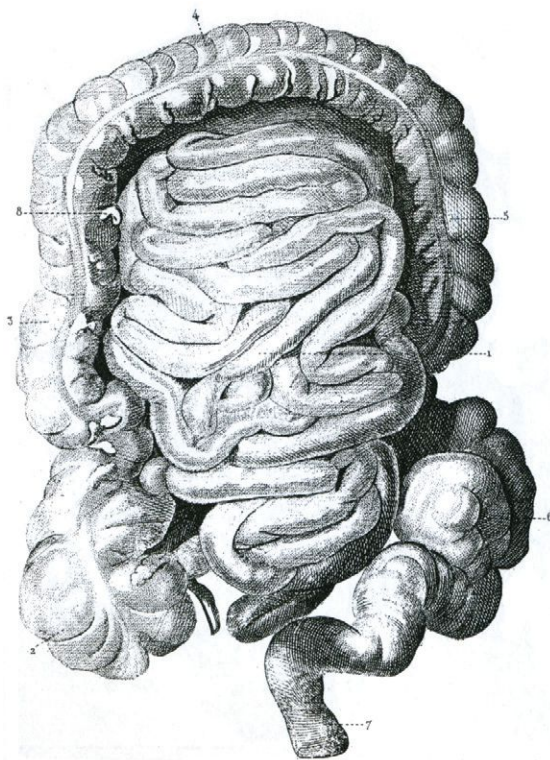
BY DAVID KOROSTYSHEVSKY

who played a central role in the transformation of proctology from a neglected corner of general practice into colon and rectal surgery, a formal specialization within general surgery.

Wangensteen's rise to prominence did not follow an obvious trajectory. As an adolescent, he never intended to be a physician, let alone a surgeon. He originally wanted to follow in his father's footsteps by becoming a farmer. With his father's encouragement, however, he finished college and entered medical school, where he quickly acquired an intense interest in surgery. Even though Wangensteen acknowledged that he was not the best student when he matriculated, he graduated at the top of his medical class.² Wangensteen interned at the University's Elliot Hospital, completed a residency at the Mayo Clinic and earned a doctorate from the University of Minnesota, but then turned down a lucrative opportunity in private practice, choosing instead the much lower salary of a University of Minnesota research professor. This thoroughly Minnesotan upbringing and education would become a source of local pride for his mentors, colleagues and students.

The beginning of Wangensteen's medical career took place at a time of turbulent institutional change at the medical school that followed the publication of Abraham Flexner's survey of North American medical education in 1910. While Flexner had found the medical school's scientific facilities to be "[e]xcellent, exceedingly attractive, and well organized," he criticized the school's small clinical facilities and dearth of full-time instructors.³ Like the rest of the medical school, the Department of Surgery became embroiled in a lengthy and contentious transition from part-time instruction by community practitioners to a full-time faculty. At the same time, the 1925 departure of Arthur Strachauer, who retired to focus on private practice, left the department chair vacant. The search committee immediately encountered difficulty in attracting suitable candidates. One contender, Boston-trained surgeon Francis Newton, remarked, "Well, there isn't anything here, nor will there ever be."⁴

Meanwhile, Wangensteen had impressed powerful medical men such as university regent William J. Mayo. The dean of the medical school, Elias Potter Lyon, and the interim leadership committee of the Department of Surgery decided to offer Wangensteen the post. But first,



they sent him to Switzerland and Germany, countries whose models of scientific research physicians in the United States esteemed, for a year (1927-1928) to finish his training. There he acquired a passion for laboratory research and the application of historical perspectives to current problems.

Soon after he returned, Wangensteen assumed the chair of the department, became the hospital's surgeon-in-chief, and immediately dedicated himself to an active research agenda. In the early 1930s, abdominal surgery was still difficult and risky. Wangensteen turned his attention to basic research on the problems of bowel obstruction, which continued to have a high mortality rate. His research revealed that what made recovery from bowel obstruction difficult was the buildup of gas and fluid pressure near the wound, which impeded healing and caused a great deal

of pain for the patient. To solve the problem, Wangensteen devised a simple device that applied a slight vacuum delivered to the site by a nasogastric tube. His patients improved immediately and the mortality associated with bowel obstruction dramatically decreased. Thus, the so-called

Wangensteen suction device was born. The device, for which Wangensteen won the prestigious Samuel D. Gross Prize in 1935, established him not only as an effective administrative leader, but as a notable surgeon-scientist.⁵

The fame of Wangensteen suction grew during World War II. Intestinal injuries, which required abdominal surgery, were common on the battlefield. GIs with these injuries recovered in special wards, which were known as Wangensteen Alleys for the rows of devices standing next to the beds. An article on the cover of a wartime issue of *Minnesota Morning Tribune's Sunday Magazine*, complete with a comic-book drawing of Wangensteen inventing the device, celebrated its life-saving

contributions to wartime medicine.⁶ His associate and friend, physiologist Maurice Visscher, estimated that by 1944, nasogastric suction "had saved some 100,000 lives."⁷ By the 1970s, the device was still so well-known that it was mentioned in an episode of popular television show *M*A*S*H*.⁸

Wangensteen's early research coincided with a broader shift in the medical school curriculum. From 1913 to 1936, Dean Lyon worked hard to implement the recommendations of Flexner's report. He sought to integrate practical medical education with laboratory research by promoting graduate degrees in clinical areas. This atmosphere shaped Wangensteen's vision of training surgeon scientists to become scholars as well as clinicians. While Wangensteen understood that the "extra hurdle" of having to do "research and qualify for a graduate degree" was

“frequently resented by fellows” in most medical fields, he believed that the student often learned in the process that professional satisfaction came with the “pursuit of knowledge to advance his chosen discipline through the agency of research.”⁹

These values inspired Wangensteen to require most surgical residents to spend a year or two in the research labs as part of their training. Many of them, such as the now-famous cardiac surgeons, earned PhDs along the way. Wangensteen’s favorite research field was physiology. In addition to supporting research within the department, he often assigned residents to work with Maurice Visscher, who joined the Department of Physiology in 1936. While this combination of clinical training with laboratory research by full-time faculty is familiar today, it was a new idea in the 1930s. At the time, only the University of Minnesota and Johns Hopkins University, whose system inspired Wangensteen, trained surgeons this way.¹⁰

Wangensteen elevated this vision of scientific surgery to the national level. Unlike young researchers in biomedical sciences, the residents who trained in Wangensteen’s program during the 1930s did not have a venue in which to present the results of their laboratory research. It was then customary for the American College of Surgeons to accept papers by younger surgeons only if they were coauthored with an older, established colleague, a practice that Wangensteen despised. Wangensteen convinced the College in 1940 to establish a forum for young investigators. It became a premier site for surgical researchers, especially residents, to present their work to the profession. In 1993, the College changed its original name from the Forum on Fundamental Surgical Problems to the Owen H. Wangensteen Surgical Forum in honor of its founder.¹¹

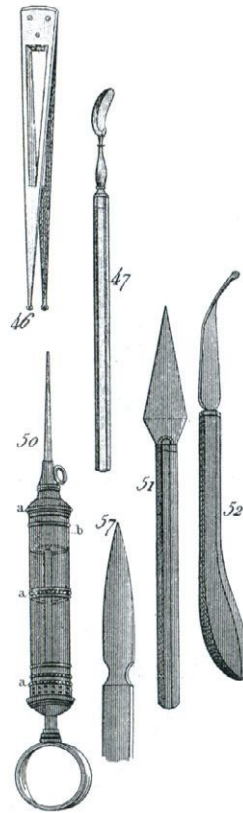
The opportunity to conduct research attracted residents like Henry Buchwald, who trained under Wangensteen in the early 1960s before joining the faculty. He wanted to become an “academic surgeon” who “engaged in basic research” as well as a “competent clinician” and “technician.” Buchwald recalls, “in that atmosphere, you

could come up with ideas... and generally he would tell you to pursue them.” Buchwald turned down an invitation to join Wangensteen’s gastrointestinal physiology lab; he was interested instead in researching “cholesterol metabolism” and its relationship to atherosclerosis and heart attacks, which Wangensteen supported with internal funding until the laboratory secured external grants.¹²

This research directly led to the development of metabolic surgery. Buchwald and his team began by determining which part of the gastrointestinal tract was responsible for cholesterol absorption, which made the first gastric bypass operation possible. Nominated by Wangensteen for this work, Buchwald became the second Minnesota surgeon to earn the Gross Prize. More importantly, early gastric bypass operations to manage cholesterol led to the surgical management of obesity and the development of bariatric surgery.

Buchwald was also active in biomedical engineering research. An active collaboration between surgeons and engineers led to the invention of an implantable drug pump in 1969. While implantable drug pumps never became a useful therapeutic medical device, they inspired the development of infusion portals, implantable devices that simplify the delivery of daily intravenous medication.¹³

The specialization of proctology into colon and rectal surgery is another significant achievement of the Wangensteen era. During the early 20th century, proctology was a neglected area of medical practice. Most physicians were not adequately trained in the treatment of hemorrhoids, fissures, abscesses and fistulas. In response, Walter Fansler, a Minneapolis practitioner, established the Section of Proctology within the Department of Surgery in 1917. Soon after the incorpora-



tion of the American Board of Proctology in 1935, Fansler and J.K. Anderson established a one-day training course in proctology at the University of Minnesota. Finishing a preceptorship under Fansler, William Bernstein entered the university community and became a friend of Wangensteen. Succeeding Fansler as director of proctology at the department, Bernstein established a formal residency program in proctology at the University of Minnesota in the early 1950s.¹⁴

Stanley Goldberg, who, like Buchwald, completed a residency in the 1960s, succeeded Bernstein as chief of a newly renamed Division of Colon and Rectal Surgery in 1972. He has fond memories of Wangensteen’s influence on his decision to become a colon and rectal specialist. “It was really Dr. Wangensteen who had the vision,” recalls Goldberg, that proctologists “should be completely trained as a general surgeon.” In his first year of residency, he met with Wangensteen for career advice and discussed his interest in proctology. “So, Dr. Wangensteen looked me in the eye,” Goldberg remembers, and said, “I want you to change everything.” He “literally outlined my life for me in five minutes.”¹⁵ David Rothenberger, who trained under Goldberg and would serve as department chair from 2013 to 2017, wrote that under Goldberg’s leadership, the practice of colon and rectal surgery in Minnesota “grew to become the largest such specialty group in the world.”¹⁶

During the Wangensteen era, Minnesota surgeons were also at the forefront of early organ transplantation. Building on the success of the cardiac program, which worked with critically ill patients, Richard Lillehei—C. Walton Lillehei’s brother—successfully transplanted dog stomachs and intestines in the laboratory as early as 1960. Transplants in human patients began in 1963, when Richard Varco led the first successful human kidney transplant

in Minnesota. The first liver transplant in the state occurred the following year, performed by Karel Absolon and Richard Lillehei. And in 1966, William Kelly and Richard Lillehei performed the world's first successful clinical pancreas transplant. And, as is quite well-known, Minnesota-trained surgeons Christiaan Barnard and Norman Shumway were performing well-publicized heart transplants by the end of the 1960s.¹⁷

These early efforts were hampered by the problem of rejection; while the operations were successful, the outcomes were unpredictable until the advent of immunosuppressive drugs in the following decade. Nevertheless, these early achievements set the stage for major breakthroughs, including solutions for managing tissue rejection, that would follow in the 1970s and '80s. After Wangenstein retired in 1967, John Najarian, a transplant surgeon and research immunologist from California, was attracted to the position specifically because of the department's reputation in surgical research.¹⁸ Under his leadership, the department would become internationally-known for transplant immunology research and a clinical destination for organ transplant patients.

Despite the high-profile successes achieved under Wangenstein's leadership, not all the efforts of scientific surgical research in Minnesota translated into therapeutic or clinical applications. As John Delaney, faculty member who trained under Wangenstein in the early 1950s, recalls, one area of research "that didn't turn out too well" was the "cooling" and "freezing of the stomach" to treat stomach ulcers, another serious medical problem in the mid-20th century. According to Delaney, the research was both "memorable" and "strange."¹⁹ An optimistic article in the *New York Times* recounted, "In one experiment to develop the technique, a frog" was "given its own oxygen supply" and placed "in the cooled stomach of an anesthetized dog for thirty-six hours." That the frog "was alive and apparently unharmed when brought out again" was meant to demonstrate the procedure's safety.²⁰ However, by the late 1960s, medical opinion about the

procedure became so negative that some researchers erased any mention of it from their CVs.²¹ Although gastric freezing failed as a practical means to take care of ulcers, Delaney explains, the research still contributed a great deal to basic scientific knowledge about gastric physiology, including the effects of mechanical and thermal injury to the stomach.²²

Despite challenges associated with cutting-edge research, Wangenstein's leadership as department chair facilitated the accomplishment of some of the most significant medical triumphs of the 20th century. Indeed, Wangenstein's legacy has become imprinted upon the very geography of the medical campus at the University of Minnesota; dominating the campus skyline, the 11th floor of the Phillips-Wangenstein Building remains the physical home of the Department of Surgery.

In celebration of the department's 110th anniversary in 2016, Minnesota governor Mark Dayton declared Wangenstein's birthday—Sept. 21—to be Dr. Owen H. Wangenstein Day.²³ Wangenstein's vision of medical research and education lives on. Within the Department of Surgery, the Division of Basic and Translational Research and Experimental Surgical Services exemplify his commitment to surgical science. Throughout his 37 years of leadership, Wangenstein never wavered in his efforts to integrate scientific research, medical education and history at the University of Minnesota. **MM**

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Leprosy

Hereditary or contagious?

How the quest for answers led to Minnesota

BY RICHARD M. CAPLAN, MD

It was 1873. Armauer Hansen's colleagues at the leprosy hospital in Bergen, Norway, thought well of him. Even his predecessor as hospital director—who was also his father-in-law and a leader in the academic world of leprosy—liked him well enough to excuse his fixed idea that leprosy was not a hereditary disease but rather an infection caused by a specific type of bacteria. If that was true, then leprosy might be a contagious disease. The prevailing opinion was that it was a hereditary affliction—passed down in families like baldness or (as “everyone knows”) tuberculosis or, perhaps, a moral or sexual taint resulting from divine punishment.

But G. H. Armauer Hansen, MD, born in 1841, could not be dissuaded by the opposition. He had taken biopsies repeatedly from his leprosy patients who had multiple cutaneous nodules; with careful study, using his fairly primitive microscope and with hardly any success at staining, he always found great numbers of macrophages engorged with tiny particles that he felt certain, by their size and shape, must be bacteria. After diligent study of so many patients, most of them poor fisherfolk from the western coast of Norway, he was ready by 1873 to publish a report of his

findings and conclusions—considered “outrageous” by a medical establishment that was convinced otherwise. By that date, scientists had observed many kinds of bacteria, and some experts had strong suspicions that particular identified organisms might be the specific cause of a corresponding disease; but no one yet had convincing arguments for this, certainly nothing that could be considered “proof” worth endangering one's reputation.

Hansen's article about the intracellular particles he had seen and studied since 1871 became the first report in medical history to claim for any disease that it was caused by the specific microscopic particles that he saw and that they were bacteria; thus, leprosy was an infection that might be transmitted from one person to another. The World Health Organization in 1990 urged that this infection be renamed Hansen's Disease, not only to honor Hansen, but also to purge the world's vocabulary of the hugely stigmatizing words “leprosy” and “leper.” That change in vocabulary and the progress in wiping out the illness have been slow.

A tenacious struggle

Hansen battled with such tenacity that he has reminded some observers of Herman Melville's character, Captain Ahab, and his obsessive struggle to kill Moby Dick, the great white whale. Hansen's struggle to persuade the medical and scientific world that he was correct was aided by the later development of improved microscopy and more effective histological staining techniques. An important step forward occurred in 1879 when the German scientist Albert Neisser visited Hansen in Bergen. Neisser, whose various contributions to the science of bacteriology are memorialized in the genus *Neisseria*, had become interested in the Norwegian's work and Hansen generously demonstrated his patients and their biopsy slides. He also provided Neisser with tissue specimens to take home to Breslau, where microscopes and staining methods were more advanced. Neisser was able to use newer techniques to confirm what Hansen had claimed. Hansen's generosity backfired, however, when Neisser published his own work as an original finding, without crediting Hansen's prior claims or assistance. That led to a long unpleasant tussle for priority called the “Hansen-Neisser struggle,” a debate that

finally came to a formal conclusion at the International Leprosy Congress in Berlin in 1897 when Hansen's priority and views were fully acknowledged.

Hansen felt pleased to have helped write the Norwegian laws that required isolation of leprosy patients in order to reduce contagious spread. That led to a marked decline of new cases, even though there was not yet solid proof of bacterial causation. The lack of "proof" relates to the lack of fulfilling Koch's Postulates, enunciated in 1890, the gold standard thought necessary to prove a bacterial cause of a disease. The so-called postulates require the acquisition of infected material from an animal subject, then growth of the suspected organism on an artificial medium, then re-introduction of the harvested material grown on the medium into a susceptible subject to successfully reproduce the original disease. In the unusual situation of leprosy, however, organisms are not available from artificial media, but only from patients, because the organisms have never—even to this day—been successfully propagated on artificial media.

Because of this crucial procedural deficiency, proof must rely on circumstantial evidence. Such evidence now persuades the scientific world to infer the causative role of *Tuberculosis leprae*, as the organism is now known. The inability to grow the organism on laboratory media has limited basic biological investigation and also slowed the development of vaccines or efficient drug testing, complicated further because the armadillo is the only feasible experimental animal, perhaps because of its uniquely low body temperature—a fascinating story for another time.

Even without firm bacteriological proof, though, some experts became quickly convinced by the increasing weight of circumstantial evidence that Hansen was correct. For instance, in his first edition of the *Principles and Practice of Medicine*, 1892, Osler wrote in a brief section concerning this illness: "The *Bacillus leprae*, discovered by Hansen, of Bergen, in 1871 is universally recognized as the cause of the disease."

As late as 1906, however, the great Victorian medical polymath, Sir Jonathan Hutchinson, published an extensive monograph claiming that although *Bacillus leprae* caused the illness, it arose not via transmission from an infected patient but from eating rotten or contaminated fish. His mass of information and speculation was impressive—although wrong—and indicated the persistence of uncertainty in the medical world. Hutchinson

Most Norwegian families in Minnesota did not show inheritance of leprosy.

clearly held his view even earlier than 1895, because the monograph of that year by Hansen and Looft argues against Hutchinson in these words:

"Against Hutchinson's hypothesis there is in the first place the fact that we have never succeeded in cultivating the bacillus, which, if the bacillus lived as a saprophyte on decaying fish, would be a very simple matter. And there are, secondly, places where the inhabitants certainly and frequently enjoy decaying fish without the disease appearing. And thirdly, there are many places authoritatively indicated where leprosy is present, and where no fish is ever eaten."

In 1888, two years before Koch's Postulates were proclaimed, Hansen still sought further ammunition in his battle to persuade the scientific world that his career-long claims were correct. He heard reports from Norwegian emigrants living in

Minnesota since as early as the 1830s that although some of them developed leprosy after their emigration, none of their children showed signs of it. Such reports, if indeed true, contrasted markedly with the experience in western Norway, where so many afflicted parents also had one or more children with the illness. In order to study the curious assertion personally, Hansen applied to the Norwegian government for a travel grant to visit Minnesota. He planned to examine families in which this seeming non-inheritance of leprosy was reported. His request was denied. A financial "angel" appeared, however, in the form of a St. Paul physician of Norwegian descent, Edward Bockman, who offered travel funds plus the hospitality of his own home. This led to Hansen's visit. He departed Norway in January 1888, for a six-month stay in St. Paul, where he lived in Bockman's home. Hansen's examination of the families in which the illness was known, and especially his scrupulous study of the children, disclosed no instance of an affected child. This information naturally contributed to the power of the argument against hereditary transmission that he had been urging since 1873.

The generally accepted reasons why Hansen found no infected children in Minnesota, as he enumerated them, were the improvement there in nutrition, far better cleanliness and sanitation, and less crowding, as well as more successful isolation of infected persons. Experts now believe that a genetic component or "susceptibility" to Hansen's Disease may exist in some families, a mechanism likely operating through heredity's genesis of the immune system.

The work in perspective

Hansen's fight against traditional belief and powerful opposition is, of course, not unique in the history of science—witness the romantic struggles exemplified in the lives of Vesalius, Copernicus, Harvey, Galileo or Darwin. In our own time, many can recall the delays and arguments before infection was accepted as the cause of peptic ulcer disease, or Legionnaire's Disease, or even AIDS. But the obverse can also

happen, as shown in a recent review of the history of the successful fight led by Joseph Goldberger to establish vitamin deficiency, not infection, as the cause of pellagra. The saga of Hansen and that of Goldberger in the early 20th century surround the rise of microbiology and the enormous enthusiasm it provoked. As Bryan and Mull wrote: "Late 19th century enthusiasm for the germ theory fueled a chase for infectious etiologies..." Add dogmatism to that enthusiasm and serious results may occur, requiring much time and effort to nullify.

A part of Hansen's saga includes a little-known bit of his personal story that foreshadowed vital developments in the modern world of medical ethics. In his fight to prove the bacterial cause of the infection, he attempted to produce a new nodular lesion by implanting material from one patient's leprosy nodule subconjunctivally into a woman who had the neuro-anesthetic type of the disease, which seldom produces nodules. The attempted transplant failed. But the patient had not been informed of the purpose of the procedure,

nor was her permission sought. Her indignation upon learning what had happened to her led to a lawsuit settled in a Norwegian court in 1880. The verdict against Hansen was a foregone conclusion, when he admitted that he didn't tell her because he expected to be refused but thought the greater gain in knowledge from a successful experiment was more important than her approval. He was punished by being removed from his role in clinical care and as director of the Bergen Leprosy Hospital. He continued for the rest of his life as a researcher and as Norway's Director of Health for Leprosy.

Although many investigators and writers today suggest that our attitudes and rules about informed consent arose in the post-World War II Nuremberg Trials and the Tuskegee syphilis scandal in the United States, earlier instances exist, as shown by Hansen's experience. The current informed-consent rules for research with human subjects were clearly anticipated by that Norwegian episode. In spite of that ethical "stain," as it may be viewed today,

Hansen's life, which ended in 1912, was then and yet recognized for his diligent effort in science and public policy to improve the health and care of patients who suffered from an ancient scourge, and potentially even to eliminate it entirely. **MM**

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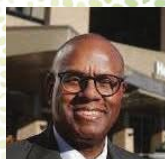
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Syl Jones, communications executive and Resident Fellow at Hennepin County Medical Center in narrative medicine.



Measles, autism and vaccination in the Minnesota Somali community

Public health education campaigns must recognize and respect cultural experiences if they are to be successful

BY FAIZA AZIZ AND STEVEN H. MILES, MD

In March 2011, Minnesota experienced a measles outbreak that arose within, and was largely confined to, the Somali community. Twenty-one cases in Hennepin County were linked to a U.S.-born child of Somali descent who had developed symptoms after travel to Kenya. Sixteen of the 21 individuals had not been fully vaccinated. Of those, nine were old enough to have received MMR vaccination. Six of the seven infected Somali children were too young to have received vaccinations.

Public health officials and news media focused on how the Somali community was receptive to Andrew Wakefield's spurious claim that the measles, mumps and rubella (MMR) vaccine increased the risk of autism, but did not explain why many in the Somali community were susceptible to these claims.

Somalis' unique experience with illness, health care and disease prevention as they left their homeland, sojourned through refugee camps and came to Minnesota shaped the response to the false claim that vaccines cause autism. Many in the Somali community were receptive to false arguments and avoided vaccinations because of:

- Vaccination experiences in Somalia and during immigration.
- Cultural beliefs and expectations affecting Somalis' use of medical care.
- Somalis' perception of autism.
- The media's influence on the community's response to a perceived health crisis.

Measles and vaccinations

Measles is a highly contagious, vaccine-preventable disease. It is a leading cause of death and disability in young children around the world. By 2000, measles had

been largely eliminated in the United States, except for occasional imported cases from developing regions still experiencing outbreaks.

In Somalia, measles is prevalent and leads to high mortality for children younger than 5 years (200 per 1,000 live births). In Somalia and in regional refugee camps, overcrowding, high rates of lung

large refugee camps in Kenya and Ethiopia. Poor sanitation, overcrowding, malnutrition and violence present challenges to United Nations vaccination programs in the camps.

Somalis who are accepted for immigration to the United States go through a medical examination and receive mandatory immunizations. Refugees are medi-

“

How can you help someone you cannot communicate with?

It was hell what I went through with my son. I had to drive him around in my car almost every night when he was little because he would not sleep or calm down...Your life stops when you have an autistic child...You cannot leave them alone, because they might harm themselves. Thank God he is able to care somewhat for himself now, but he still cannot talk after years of therapy.

“I have had measles before, and it was not as bad as autism. You are sick for a couple of days, then you get better. Autism damages for life...it is irreversible.”

– Minnesota Somali father of an autistic child

disease, malnutrition and limited medical care increase the risk of transmission of measles and of ensuing outbreaks. Despite extreme logistical problems, for many years, Somalis had welcomed vaccination in Somalia, where more than half the children are vaccinated. In 1991, the fall of the Somali government and the ensuing collapse of the public health infrastructure damaged national disease surveillance and vaccination programs. Since then, clan rivalries have prevented the formation of national institutions. Many Somalis fled to

cally examined and vaccination status is confirmed on arrival in the United States.

Changing perceptions about vaccinations

Although Somalia is desperately poor and disrupted, rising immunization rates and falling measles rates show broad interest in vaccination to prevent acute disease. In Somalia, clinical care is scarce and is used for treatment of infections, traumas or disabilities, rather than for prevention. Outreach programs through donor orga-

nizations provide supplementary vaccinations. In Somalia, measles is common and vaccinations are valued because clinics for treating illness are scarce and costly.

When they arrive in the United States, Somalis find clinics to be readily available and measles to be rare, and they have high expectations of the efficacy of disease treatment, so they tend to place less value on preventive health care.

As Somalis in the United States do their risk-benefit analysis, the idea that a chronic complication such as autism might arise from the vaccine can lead them to be highly vaccine-averse.

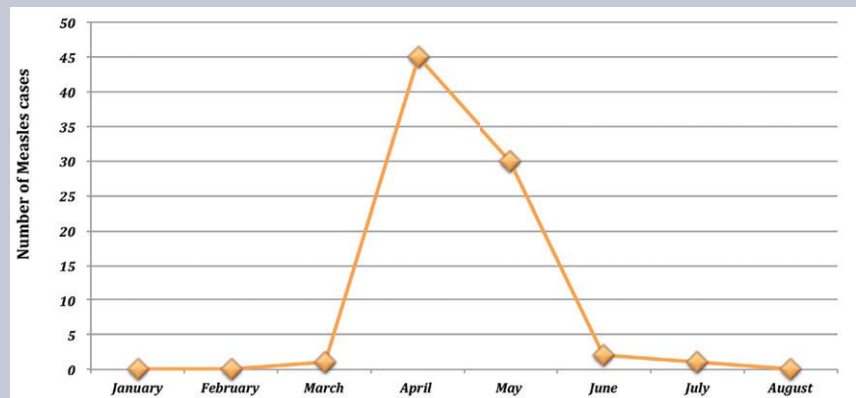
Perceptions of autism

Autism spectrum disorders (ASD) are global neuro-developmental disorders affecting all races and socio-economic groups. ASDs are characterized by a wide range of symptoms, including cognitive and functional disabilities. According to the Centers for Disease Control (CDC), the increasing number of cases of ASD in the United States may be because more are identified through school-based screening and special education programs. It was the results of school-based screening for possible learning disabilities that ignited fears of excess autism in the Somali community. Autism is known in East Africa; there are autism treatment centers in Ethiopia and Kenya. However, many African clinics are not capable of diagnosing ASDs. Some West Africans who care for children attribute ASD symptoms to supernatural causes such as angered ancestral spirits, sinful wrongdoing (most often by the mother) or by action of the devil. In general, the stigma of mental health disorders is a barrier to seeking care. Symptomatic children often are taken to traditional healers before they are seen in medical clinics.

The lack of recognition and identification of ASD in Somalia, contrasted with cases identified through routine school-based screening in the United States, at least partially set the stage for Somalis in the United States believing that ASD was a new health risk for them, incurred during immigration.

FIGURE 1

Minnesota Measles Cases, January-August 2017



Reported Measles cases in Minnesota from January-August 2017 as the outbreak was winding down (Source: Minnesota Department of Health)

Autism, vaccine hesitancy and the 2011 measles outbreak

Three years before the 2011 measles outbreak, a Minnesota Somali parent saw media reports that an unusually high number of Somali school children were being referred to autism-assessment programs. She raised alarms in the Somali community. In 2009, in response to Somali concerns, the Minnesota Department of Health (MDH) collaborated with Minneapolis Public Schools (MPS) to measure the proportion of Somali preschoolers receiving ASD services and found it to be elevated, consistent with the community perception. Vaccine opponents quickly spread information from a 1998 paper by Andrew Wakefield that posited a causal link between ASD and the MMR vaccine. In 2010, *The Lancet*, the journal that had published Wakefield's paper, retracted it and Wakefield's medical license was revoked, but vaccine opponents kept Wakefield's debunked view and celebrity alive. By March 2011, vaccination opponents had organized at least three meetings between Andrew Wakefield and Somali parents in a Minneapolis Somali restaurant. Media coverage engendered by his celebrity and the idea of covering "all sides of the issue" fueled the myth that there was a scientific controversy.

The Somali community is built on extended kinship relationships. Communi-

cation tends to be oral and many Somalis, especially mothers, are not fluent in English. Rumors about the fallacious association between measles vaccination and an increased risk of autism rapidly spread. As Somalis heard that the MMR vaccine increased the risk of autism, immunization rates for Somalis dropped rapidly. And in 2011, there was a first measles outbreak.

Few Minnesota Somalis knew of autism before the 2011 launch of the Minneapolis Somali Autism Spectrum Disorder Prevalence Project (MSASDPP), which was funded by the CDC, the National Institutes of Health (NIH) and Autism Speaks. It was designed to assess whether Somali children in Minneapolis, 7 to 9 years of age, had a higher prevalence of autism than non-Somali children. Its 2013 report noted that Somali and Caucasian children had the same incidence of ASD but that Somali children suffered more severe cognitive defects, possibly because of other experiential or environmental factors.

It is an oversimplification to conclude that Somali parents who rejected measles vaccination for their children are anti-vaxxers, anti-science or homeopaths. A 2014 study examined challenges facing the Somali, Hmong and Latino communities. It found that Somali parents were not anti-Western medicine or passive about seeking care. Indeed, they actively sought out services and alternatives for their

children from schools, ASD centers and expert medical advisers and advocated for insurance coverage to provide family, educational and supportive care service.

The 2017 Measles Outbreak

In 2017, Minnesota’s Somali community experienced another outbreak of measles. Sixty-four of the 79 Somali cases lived in Hennepin County. Statewide, 71 of the 79 children under the age of 10 with measles had not been vaccinated. By the time the outbreak was declared over on Aug. 25, 2017, at least 500 people had been identified as exposed, the most since 1990.

The Somali vaccination rates during the 2017 epidemic showed progress. As the outbreak peaked in the months of April and May, there also was a surge in MMR vaccination administered, particularly in the hardest hit region of the state, Hennepin County (Figures 1 and 2). The number of people vaccinated in 2016 greatly exceeded the number during the 2011 outbreak.

In April and May 2017, two community forums to listen to the public health message were held. Public health officials, Somali leaders and Somali health practitio-

ners who attended were well prepared with facts. But the public forum was conducted in English without bilateral simultaneous translation (speaker to audience and audience questioner to speaker), as is standard practice for cross-cultural health presentations in refugee camps. The lack of simultaneous translation deterred attendance and participation by less enculturated members of the Somali community and by mothers, who are less likely to speak English. The core message of the panelists was: “Vaccinate; the measles vaccination does not cause autism.” The panelists noted that vaccine hesitancy is deeply rooted, but they did not address why or how these roots were formed.

The public health officials did not outline any plans for future autism studies in the Somali community. Given the skepticism of the Somali community about the applicability of studies of the autism-vaccine relationship in European communities, this seemed a missed opportunity to reassure the community that the biomedical susceptibility to autism is the same in Europeans, North Americans and Somalis.

Going forward

Health risks in children engender high emotions. Anxious parents will interpret information in light of science, experience, anecdotes, love and fear. Some criticized parents who did not vaccinate their children because of unwarranted fears. They even argued that such parents were negligent, unconcerned about their child’s interests or the public health. Such criticism is off the mark; non-vaccinating parents are trying to protect, not endanger, their children. A civil and culturally informed dialogue is needed to prevent the next measles outbreak.

Minnesota’s public health officials have much to do if they are to prevent another measles outbreak. Certainly, they must encourage vaccination and rebut the Wakefield fraud as they have done. In addition:

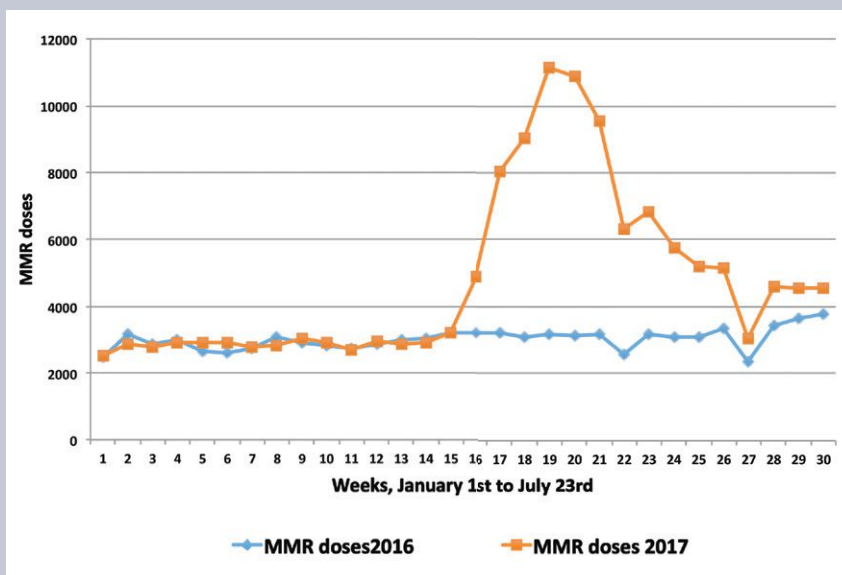
- They must work with media so that news coverage does not legitimize a spurious vaccine controversy with two-sided coverage of Wakefield’s position.
- Their communication with the Somali community must be more substantive than handing out multilingual pamphlets and engaging Somali leaders.
- Public meetings must have full real-time bilateral translation of all presentations and audience questions if they are to draw Somalis who are not fluent in English and who are otherwise influenced by lay peers.
- They should seek to understand and engage how the Somalis’ experience in their homeland, in refugee camps and through immigration has shaped their understanding of the benefits and risks of vaccination.

Health departments must cultivate better ongoing community engagement, rather than simply prioritize relations with the Somali community during disease outbreaks. **MM**

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FIGURE 2

MMR Vaccine Doses Administered by week, 2016 vs 2017



A comparison of 2016 vs 2017 weekly number of Measles, Mumps, and Rubella (MMR) vaccine administered from January 1 through July 23.

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News Briefs

Staffer named new MMA CEO

The MMA Board of Trustees has selected Janet Silversmith as its new CEO. Silversmith, who had been the MMA's director of health policy and member services, officially took over on January 1.

"We are all very excited to have Janet move up to the CEO position," said Randy Rice, MD, MMA board chair and part of the association's search committee. "Her experience, her knowledge of the Minnesota health care market, her strong relationship building, management and communication skills were very important factors in selecting her."

"I'm extremely excited to serve as the MMA's next CEO," Silversmith said. "I look forward to strengthening the role of MMA as an organization that can amplify the expertise, compassion, and commitment of individual physicians for the benefit of all Minnesotans and today's health care challenges."

Silversmith has worked at the MMA since 1993, beginning as a health policy analyst. She was promoted to director of health policy in 1998. She has also worked at the American Indian

Health Care Association, the University of Minnesota, and served as a session clerk for the Minnesota Senate.

She has a Master of Arts in Public Affairs from the Humphrey Institute of Public Affairs at the University of Minnesota, where she also received her undergraduate degree.



LEGISLATIVE SESSION PREVIEW:

Challenges ahead

The 2018 legislative session looks like it will be short, but anything but sweet.

When lawmakers gather in St. Paul on Feb. 20, they will be facing several major issues that may complicate their jobs.

First, they likely will be facing a budget deficit. In early December, Minnesota Management and Budget, the state's fiscal agency, revealed its November economic forecast, which predicts a \$188 million deficit in the 2018-2019 biennial budget and a deficit of \$586 million in 2020-2021.

Along with a possible deficit, legislators are facing a protracted budget battle with the governor, sexual harassment charges against a number of legislators and the looming November election.

"Lawmakers will be dealing with a number of distractions this session," says Dave Renner, the MMA's director of state and legislative affairs. "It will be a challenging session for all parties at the Capitol—from legislators to advocates and the public."

Nevertheless, the MMA is entering the session with two key goals, as determined by the Board of Trustees in November:

Support legislation to ensure patients have access to needed medication in a timely manner. This includes continuing efforts to pass medication prior-authorization reforms, support legislation that limits the use of step therapy, limit the number of formulary changes during a patient's contract year and opposing limits on practitioners' and pharmacists' ability to ensure patients get the most cost-effective therapies available.

Support increased funding to reduce the harm of opioid use by investing in patient and prescriber education programs, expanding addiction treatment programs and embedding the Prescription Monitoring Program into electronic health records.

Additionally, the MMA will continue to work to maintain the repeal of the provider tax as scheduled in January 2020.

Stay tuned to *MMA News Now* and future issues of *Minnesota Medicine* on legislative updates through the session's conclusion in May.

January is Health Equity Month in Minnesota

The MMA, along with a host of other health care organizations, is declaring January 2018 to be Health Equity Month in Minnesota.

As part of the month, the MMA will host an online learning event on Jan. 17 from noon to 1 p.m. on the MMA's Facebook Live page. The event is designed to educate physicians and other health care workers about the health disparities that exist in the state.



Speakers include: Bruce Thao, executive director of the Center for Health Equity at the Minnesota Department of Health; Sarah Atunah-Jay, MD, Mayo Clinic, co-chair of the Minnesota Chapter of the American Academy of Pediatrics Poverty/Health Disparities Work Group; and Stephen Nelson, MD, Children's Minnesota, member of the MMA Health Equity Advisory Group.

Atunah-Jay will address strategies to promote health equity in the clinic setting, while Nelson will discuss how bias affects pain management and other topics faced by patients of color.

The MMA will also host an in-person Health Equity Forum on Jan. 24 from 5 to 8 p.m. at 317 on Rice Park Event Center in downtown St. Paul.

Speakers include: Brooke A. Cunningham, MD, PhD, assistant professor with the Department of Family Medicine and Community Health at the University of Minnesota. The forum will include five table discussions on: The Role of Implicit Bias/Explicit Bias in Opioid Epidemic; The Role of Providers in Addressing Social Determinants of Health; How Does Literacy & Health Literacy Contribute to Disparities?; How Can Providers Mitigate Implicit Bias and Structural Racism?; and How Can Providers Drive Their Health Systems and Clinics Toward Equitable Care?

Sponsors for the forum include: Hennepin County Medical Center; Minnesota Psychiatric Society; Twin Cities Medical Society; American Indian Cancer Foundation, Aquí Para Ti; Honoring Choices Minnesota; Minnesota Academy of Family Physicians; Minnesota Chapter, American College of Physicians; Minnesota Community Measurement; the MMA Foundation's Physician Volunteer Program; Physician Advocacy Network; and Zumbro Valley Medical Society.

The MMA's partners for the month include: Aquí Para Ti; Minnesota Academy of Family Physicians; Minnesota Chapter, American Academy of Pediatrics; Minnesota Chapter, American College of Physicians; Minnesota Department of Health; Minnesota Doctors for Health Equity; the Physician Advocacy Network; Twin Cities Medical Society; and Zumbro Valley Medical Society.

For more information on the MMA's efforts and to register for the forum, visit www.mnmed.org/HealthEquityMN.

Autism and sleep apnea added to medical cannabis program

Former Health Commissioner Edward Ehlinger, MD, announced in late November his decision to add autism spectrum disorders and obstructive sleep apnea as new qualifying conditions for the state's medical cannabis program. Patients with these conditions can enroll in the program as of July 1, 2018.

As in years past, the Minnesota Department of Health (MDH) used a formal petitioning process to solicit public input on potential qualifying conditions. Throughout June and July, Minnesotans were invited to submit petitions to add qualifying conditions. The process included public comments, a citizens' review panel and a set of research summaries for each condition, prepared by MDH staff.

Petitioners put forward a total of 10 conditions for consideration this year, including anxiety disorders, autism, cortico-basal degeneration, dementia, endogenous cannabinoid deficiency syndrome, liver disease, nausea, obstructive sleep apnea, Parkinson's disease and peripheral neuropathy. There were also petitions to add cannabis delivery methods, including infused edibles and vaporizing or smoking cannabis flowers, which were not approved.

As with the program's other qualifying conditions, patients will need advance certification from a Minnesota health care provider. The list of current qualifying conditions includes:

- Cancer associated with severe/chronic pain, nausea or severe vomiting, or cachexia or severe wasting.
- Glaucoma.
- HIV/AIDS.
- Tourette's syndrome.
- Amyotrophic lateral sclerosis (ALS).
- Seizures, including those characteristic of epilepsy.
- Severe and persistent muscle spasms, including those characteristic of multiple sclerosis.



- Inflammatory bowel disease, including Crohn’s disease.
- Terminal illness, with a probable life expectancy of less than one year.
- Intractable pain.
- Post-traumatic stress disorder.
- Autism spectrum disorders (effective July 1, 2018).
- Obstructive sleep apnea (effective July 1, 2018).

MMA board supports MinnesotaCare buy-in if criteria followed

In order to add stability and provide affordable options in the individual insurance market, the MMA Board of Trustees voted in November to allow individuals to purchase MinnesotaCare coverage under certain circumstances to be defined in future legislation.

The situation in which the MMA would support individuals purchasing MinnesotaCare coverage is as follows: 1) there is otherwise no access to affordable coverage; 2) there are one or fewer insurance plans available in a county; 3) MinnesotaCare payment rates are set at no less than Medicare levels; and, 4) the premiums paid cover the full cost of enrollment in the program.

This action came to the board as a recommendation from the MMA’s Policy Council. The Council discussed the topic following a health care policy forum on MinnesotaCare held at the 2017 MMA Annual Conference. Nearly 59 percent of forum attendees supported allowing a buy-in.

The MMA has previously expressed concern over the relative volatility and uncertainty in Minnesota’s individual insurance market over the past couple of years. Insurers have left the market (PreferredOne for 2015 product year and Blue Cross Blue Shield for 2017 product year), premium increases have been significant (59 percent average increase in 2017 over 2016 rates), the scope of provider networks has narrowed and insurers have limited their geographic offerings. Nationally, uncertainty about Congressional and/or administrative actions with respect to the Affordable Care Act has further challenged the individual market.



Total cost of care increases, report shows

The total cost of medical care in Minnesota increased 3.4 percent from 2015 to 2016 for commercially insured patients, according to a report released by MN Community Measurement (MNCM) in November.

The report shows an increase in average costs for commercially insured patients per month from \$474 in 2015 to \$490 in 2016. Growth in 2016 was lower than the previous year (5.6 percent), but higher than the 3.1 percent growth recorded in 2014.

The 2017 Cost and Utilization Report provides comparable cost of health care information for patients with commercial insurance from Blue Cross Blue Shield of Minnesota, HealthPartners, Medica and PreferredOne.

The report is based on data from 2016 health insurance claims for approximately 1.5 million commercially insured patients.

In addition to this report, MNCM publishes total cost of care and the average cost of 118 common medical procedures by medical group level on its consumer-oriented website, MN-HealthScores.org.

MMA, ZVMS host gubernatorial candidate forums in Rochester

The MMA and Zumbro Valley Medical Society hosted two gubernatorial candidate forums in October in Rochester.

Four Republican candidates pushed for more choices for consumers and less government control at one event and five Democrats at another event lamented that money is getting in the way of allowing Minnesota to be the healthiest state in the nation.

The GOP event featured Rep. Matt Dean, former Rep. Keith Downey, Hennepin County Commissioner Jeff Johnson and Sen. Dave Osmeck. Tom Overlie, anchor for KTTC-TV, served as moderator for the 90-minute event.

The DFL event featured Rep. Tina Liebling, State Rep. Erin Murphy, State Auditor Rebecca Otto, State Rep. Paul Thissen and U.S. Rep. Tim Walz. Jay Furst, executive editor of the *Rochester Post Bulletin*, served as moderator of the 90-minute event.

Co-sponsors for the forums included: Minnesota Academy of Otolaryngology; Minnesota Chapter, American College of

On the calendar

Event	Date	Location
Health Equity Learning Opportunity	January 17	Online (MMA’s Facebook page)
Health Equity Forum	January 24	St. Paul
2018 Day at the Capitol	March 14	St. Paul
2018 Annual Conference	September 21-22	St. Paul

Cardiology; Minnesota Chapter, American College of Physicians; Minnesota Dermatological Society; Minnesota Medical Directors Association; Minnesota Orthopaedic Society; and Minnesota Radiological Society.



POLST MN form updated

In November, the POLST Minnesota Steering Committee updated the POLST MN form and created new educational resources to support the Provider Orders for Life Sustaining Treatment (POLST) program in Minnesota. The MMA launched the POLST Minnesota program in 2008 and currently serves as the program administrator.

POLST is designed to facilitate communication between health care professionals and patients with serious illness or frailty (or their authorized surrogate), who may well die within a couple of years or less. POLST encourages shared, informed medical decision-making leading to a set of portable medical orders that respect a patient's goals for care in regard to the use of cardiopulmonary resuscitation (CPR) and other medical interventions, is applicable across health care settings and can be reviewed and revised as needed.

The POLST form allows for emergency medical services (EMS) or other health care professionals to know what treatments the patient wants in the event of a medical emergency. The current standard of care during an emergency is for EMS or other health care professionals to attempt everything possible to attempt to save a life. Not all patients who are seriously ill or frail want that treatment, however, and the POLST form provides the option for them to exercise increased control over the treatment they do and do not want to receive at the end of life.

Call for submissions: students, residents and fellows

Minnesota Medicine is inviting medical students, residents and fellows to submit abstracts of original research or clinical vignettes by Feb. 28, 2018. The submissions demonstrating appropriate quality will be selected for publication in the magazine and authors will be invited to present their work in a poster session at the MMA's 2018 Annual Conference in St. Paul. Submissions should be no longer than 500 words plus references. Research abstracts should include a brief description of the research problem, methodology and results, and a discussion of the findings. Clinical vignettes should include a description of the case, the diagnosis and treatment approach and a discussion of the implications of the case. Submit your abstracts and vignettes at www.mnmed.org/abstracts.



Janet Silversmith



Dave Renner



Eric Dick



Elizabeth Anderson

MMA in Action

In early November, **Janet Silversmith**, former director of health policy, presented to Fairview Physician Associates regarding Medicare's Quality Payment Program (MACRA) and changes for 2018. Silversmith attended Medicare & Medicaid Services Region V meeting in Chicago in December. Silversmith, Vic Sandler, MD, and Thaddeus Pope, JD, PhD, POLST MN Steering Committee Co-Chairs, attended the Minnesota Nurses Association Ethics Committee meeting to discuss POLST in December.

Randy Rice, MD, MMA board chair, attended a meeting on Maintenance of Certification (MOC) in Chicago in early December. Attendees included state medical societies, national specialty societies and medical specialty certifying boards. The purpose was to discuss the concerns from some specialties that the board certification process and MOC is overly burdensome, not focused on assuring quality and costly.

Dave Renner, director of state and federal legislation, is scheduled to attend the AMA State Legislative Strategy Conference in early January in Florida. This conference provides a chance for state medical societies, specialty societies and the AMA to discuss upcoming legislative issues and develop strategies to address them.

Eric Dick, manager of state legislative affairs, represented the MMA at a November meeting of the Rural Health Advisory Committee (RHAC). The RHAC serves as a statewide forum to discuss health-care issues of particular concern to rural Minnesota. The group, made up of physicians, other health care professionals, rural hospital leaders and consumers, advises the governor and Legislature on issues related to rural health care. With other representatives from health care organizations, Dick presented the MMA's 2018 legislative priorities.

Elizabeth Anderson, membership director, and the membership staff are available for in-clinic MMA updates. Email eanderson@mnmed.org for more information.



Robert Meiches, M.D.

Q&A with Robert Meiches, MD

On December 31, Robert Meiches, MD, worked his last day as CEO of the MMA. This comes after more than two decades with the association, first as a volunteer and then as its leader. Medicine has transformed drastically during his tenure. The Freedom to Breathe Act. The Affordable Care Act. Medical cannabis. The opioid epidemic. The transformation from independent docs to employed physicians.

We spoke with him as he entered his last month at the MMA.

Minnesota Medicine: *In what significant ways has the MMA changed in the two decades that you've been actively involved with it?*

Meiches: Members have changed. Forty years ago, all physicians joined organized medicine, their county, state, national and specialty organizations. Since that time, physicians have become increasingly diverse in their perspectives and focus. Virtually all physicians participate with their specialty and/or sub-specialty societies but the perceived value of a geographic-based association is mixed and has required a greater focus on demonstrating value and on active pursuit of member recruitment and retention.

As the marketplace has progressively consolidated, smaller, privately-owned clinics now represent a much smaller portion of the whole. Although individual physicians are MMA members, greater attention to large clinics and systems has been an increasing focus for the MMA.

While all physicians continue to value the patient/physician relationship and improved quality care and outcomes, physician perspectives are much more varied. Consequently, there are more ideas, policies and work to be accomplished. The MMA has needed to focus on key priorities and to keep up with the rapid pace of change. Working on issues like EMRs, measurement, guidelines and physician wellness was unheard of 20 years ago. Since the MMA cannot lead all efforts, it has become a much more collaborative organization, working with a large number of partners across the state and nation.

MM: *What do you think have been the association's most substantial accomplishments during your tenure?*

Meiches: In 2005, the MMA developed a *Physicians Plan for a Healthy Minnesota—The MMA Proposal for Health Care Reform* (www.mnmed.org/PhysiciansPlan). It was an extraordinary accomplishment and has served as a guide for many health-care reform activities the past decade. I urge physicians to read it because it provides a great framework for health care today. Eliminating the use of tobacco in bars and restaurants across Minnesota has been the greatest single accomplishment to improve health. This legislative success could not have been accomplished without dedicated work over many years and successful collaboration with like-minded partners.

MM: *What has frustrated you?*

Meiches: Not tackling more issues, not moving faster, spending too much time listening to naysayers.

The legislative process—most physicians don't understand it and don't want to. They expect MMA action and success without engaging in the process individu-

ally. For most physicians, it is difficult to comprehend that money matters more than logic, science and good data at the Capitol.

MM: *What's the one bit of advice you'd give your replacement?*

Meiches: When leadership changes, organizations have an opportunity to refresh. It is my hope the new MMA CEO listens and learns from volunteer leaders and staff, brings forward their own ideas and expertise and sets a direction that will improve patient health and physician lives that can continue to make a difference in Minnesota.

MM: *What are your plans for your post-MMA career?*

Meiches: After working with the MMA for more than 23 years (nine as a trustee and board chair and more than 14 as CEO) I felt it was time to make a transition. I'm not calling it a retirement. The next stage of my professional life will include a greater focus on aging and geriatrics: clinical care, medical direction, teaching, writing and speaking. I hope to give back to the community in a variety of ways, including volunteer and board work. I also want to spend time on personal and family issues that were too often neglected. Working with and for the MMA has been one of the great privileges and pleasures of my life. Not only has the association made its mark with significant accomplishments, I have had the honor of working with wonderful physician colleagues across the state, particularly Dick Geier, MD; Mike Ainslie, MD; Dave Thorson, MD; and Doug Wood, MD. I have encountered many inspiring individuals across the state and nation who are committed to improving health. Finally, I have had the opportunity to work with extraordinary MMA staff who, in my opinion, are the backbone of the MMA. Without them, nothing would be accomplished. To all, thank you, and stay in touch (rmeiches@gmail.com).

VIEWPOINT

Long goals for short session

The upcoming legislative session, which begins February 20, will be a relatively short one. Lawmakers will be navigating the divide that has grown between the governor and legislators as well as dealing with the fallout from widespread and growing sexual harassment allegations against several legislators. Amidst this turmoil, Minnesota's physicians hope to move their agenda forward. Given the political dynamic, it will be a challenge.

In November, the MMA's Board of Trustees approved two key initiatives for what is expected to be a 12-week session:

- Support for legislation to assure patients have access to needed medication in a timely manner. This includes support for the MMA's continued efforts to pass reforms related to medication prior authorization. It also includes support for limiting the use of step therapy that interferes with patients accessing their medications, support for limiting the number of formulary changes during a patient's contract year and opposition to limits on practitioners' and pharmacists' ability to ensure patients get the most cost-effective therapies available.
- Support for legislation to reduce the harm of opioid use through increased prescriber and patient education, increased addiction treatment and funding to support embedding the Prescription Monitoring Program into the EHR.

These priorities were vetted by the board following a retreat hosted by the MMA in mid-November. More than 50 people took part in the retreat, including MMA board members, MMA committee members, specialty society leaders, component society leaders, AMA delegation members and MMA staff. The group developed a list of 42 possible issues facing physicians and patients.

We expect that many of these 42 issues might come up during the legislative session and we will monitor them closely and engage with legislators as necessary to represent physicians and promote health. But, given the shortened session, the MMA will dedicate much of its energy toward our two priorities. (A great opportunity for you to help is March 14, when the MMA hosts its annual Day at the Capitol event.)

Of note: retreat attendees and the Board of Trustees elected not to include maintaining the repeal of the provider tax as a legislative priority. The MMA still strongly supports the repeal and will continue to work to ensure that the provider tax is repealed as scheduled in January 2020. We anticipate that the Republican-controlled House and Senate will not entertain efforts to extend the tax during the 2018 legislative session. Nevertheless, it's a topic that continues to be discussed, simply because so many of our members are concerned about the future of the programs that the provider tax funds. Where will the funding come from when the tax sunsets?

We still oppose the tax. We just think it's time the focus shifts and lawmakers start talking about how to replace the funds the tax generates. The MMA fully intends to be at the table when those conversations begin in earnest.

As you can see from the two priority issues, the MMA continues to be focused on the goals of our strategic plan—ensuring that Minnesotans are the healthiest in the nation and that Minnesota is the best place to practice medicine.



Randy Rice, MD
MMA Board Chair

Given the political dynamic of the Legislature, the upcoming session will be a challenge.

Examining prescription opioid use in Minnesota using the Minnesota All Payer Claims Database

NATE WRIGHT, MPH, AND JON ROESLER, MS

Prescribing rates for opioids have been found to vary widely from state to state. Through the Minnesota All Payer Claims Database (MN APCD), pharmacy billing record information was used to identify trends in prescription opioid use from 2009 to 2013. The aim of this analysis was to determine from pharmacy claims the amount and rate of prescription opioid use among insured Minnesotans. Results for opioid claims highlight trends by demographic and geographic variables of interest. Opioid claims were also grouped to identify the most commonly prescribed opioids over this five-year period. Recommendations for prescribers and patients are included, as well as current initiatives in Minnesota to improve opioid prescribing.

Background and Introduction

Pain is one of the most common reasons people seek medical attention. Prescription opioids are an integral part of medical practice in response to pain. The production and supply of prescription opioids increased dramatically from the late 1990s through the early 2000s. Furthermore, sales of prescription opioids in the United States nearly quadrupled from 1999 to 2014, but there has not been an overall change in the amount of pain that Americans report. The role of prescription opioids is being scrutinized in light of the current opioid overdose epidemic that has largely been driven by these drugs. In Minnesota, prescription opioids have accounted for a majority of opioid-involved overdose deaths since 2000.

An estimated 1 out of 5 patients with non-cancer pain or pain-related diagnoses receive an opioid prescription. From 2007-2012, the rate of opioid prescribing steadily increased among specialists who are more likely to manage acute and chronic pain. Prescribing rates were highest among specialists in pain medicine (49%), surgery (37%), and physical medicine or rehabilitation (36%). However, primary care providers accounted for about half of opioid pain relievers dispensed.

Health care providers, including those in primary care settings, report concerns about opioid-related risks of addiction and overdose in their patients, and about insufficient training in pain management. Although prescription opioids can help manage some types of pain, there is not enough evidence to conclude that opioids improve chronic pain, function, and quality of life.

Moreover, long-term use of opioid pain relievers for chronic pain—particularly at higher dosages—can be associated with substance use disorder and overdose.

The goal of this study was to describe and compare prescription opioid use among insured Minnesotans from 2009 to 2013. These analyses utilized de-identified pharmacy claims data that are included in the Minnesota All Payer Claims Database (MN APCD). We examined the magnitude and distribution of prescription opioid use in Minnesota, by characteristics such as age, gender, and geographic region. The aim of this analysis was to determine the amount and rate of prescription opioid use from pharmacy claims among insured Minnesotans.

Methods

The MN APCD is a comprehensive state repository of health care transactions for insured Minnesotans derived from the billing records of medical providers. The MN APCD systematically collects and integrates medical claims, pharmacy claims, and eligibility and provider files from private (i.e. commercial payers) and public (i.e. Medicaid and Medicare) payers. The MN APCD contains claims for about 89% of Minnesotans with insurance coverage and about 85% of all Minnesotans—thus permitting a rich and systematic analysis of health care delivery for the state.

Health care services that are not reported to the MN APCD include workers' compensation, Medicare Supplemental/Medigap plans, Veterans Affairs (VA), Indian Health Service (IHS), Tricare, uninsured, and services by plans that do not cover general medical care (e.g. accident-only).

A total of 2,044 National Drug Codes (NDC) relevant to prescription opioid claims were identified, with 1,703 found in the MN APCD. Using these, an opioid pharmacy claims dataset was created. The pharmacy claims were de-duplicated and cleaned to remove claims with negative charges or negative quantity amounts. Pharmacy claims for all ages during the five years from 2009 to 2013 were analyzed, but results are only reported for 2009 and 2013. Emergency Medical Service (EMS) Regions determined by the Emergency Medical Services Regulatory Board were used for geographic analysis. Counts of prescription opioid claims for Minnesota ZIP Codes of residence were weighted to produce counts for counties and EMS regions; only EMS region findings are presented. The pharmacy claims were then summarized by year, type of prescription opioids, geographic, and demographic variables.

Results

From 2009 to 2013, the number of insured Minnesotans with a pharmacy claim for a prescription opioid increased 8.6%, from 814,060 to 883,991. This corresponded to a statistically significant increase in the number of claims for prescription opioids from 3,081,580 in 2009 to 3,448,353 in 2013 ($P < 0.0001$). Additionally, the rate of insured Minnesotans with an opioid prescription increased from 16.45 per 100 insured Minnesotans in 2009 to 17.65 per 100 in 2013. The rate of claims during that period also increased statistically significantly, from 61.2 claims per 100 insured Minnesotans to 67.6 claims per 100 ($P < 0.0001$).

Opioid claims were grouped to understand the most commonly prescribed opioids (Figure 1). Hydrocodone had the highest number of claims (1,289,967), and the number of claims was relatively similar in 2009 and 2013. Oxycodone and

FIGURE 1

Prescription opioid claims increased for oxycodone and tramadol, while hydrocodone had the greatest number of claims.

Figure contains only select opioid categories.

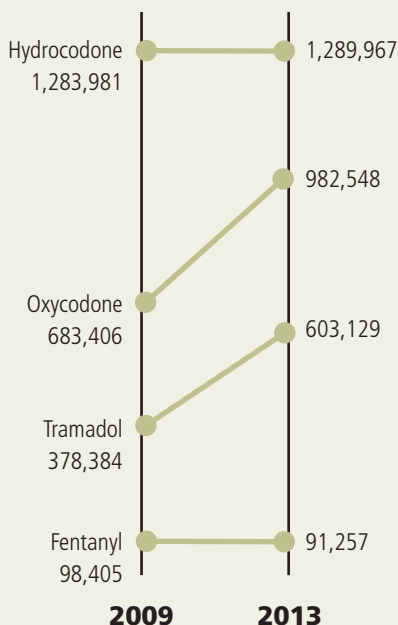


TABLE 1

In 2013, rates of opioid claims were highest in the northeast, northwest, and central regions of Minnesota

REGION	OPIOID CLAIMS	POPULATION	RATE PER 100	% CHANGE FROM 2009
Northeast	284,967	326,489	87.3	0.7%
Northwest	123,568	165,374	74.7	1.0%
Central	516,609	735,653	70.2	11.9%
South Central	173,550	264,166	65.7	8.3%
West Central	146,203	224,676	65.1	6.4%
Metro	1,778,145	2,952,932	60.2	10.0%
Southeast	270,422	500,137	54.1	9.3%
Southwest	134,104	347,096	38.6	8.1%

NOTE: The total count of opioid claims by EMS region is lower than the 2013 total of opioid claims because when weighting opioid claims from ZIP Code of residence to region only Minnesota ZIP Codes of residence were used in the analysis.

The rates of opioid claims were also calculated for each of the eight Emergency Medical Service (EMS) regions of Minnesota. In 2009 and 2013, the regions that had the highest rates of opioid claims remained consistent. Those regions were in the northeast (87.3 claims per 100 insured Minnesotans), northwest (74.7 claims per 100 insured Minnesotans), and central regions (70.2 claims per 100 insured Minnesotans) of the state (Table 1). The EMS regions with the greatest percent change in number of claims in 2009 versus 2013 were in the central (11.9%), metro (10.0%), and southeast regions (9.3%); there was little change in the number of claims in the northeast (0.7%) and northwest regions (1.0%) (Table 1).

tramadol claims significantly increased when comparing 2009 and 2013 (43%; $P < 0.001$ and 59%; $P = 0.001$ increases, respectively). Fentanyl claims decreased modestly (7%) from 2009 to 2013. Claims for buprenorphine and methadone were small and relatively stable in 2009 and 2013 (data not shown).

Women had a greater percentage (63%) and rate of opioid claims compared to men. From 2009 to 2013, the greatest number of opioid claims was in the 45-54 age group (684,670 to 725,983), but the greatest significant increase in the number of claims was among the 55-64 age group (33% increase; $p = 0.0001$) (Figure 2).

In 2009 and 2013, the highest rate of opioid claims was in the 85+ age group, but that rate decreased 7% from 2009 to 2013 ($P = 0.55$). In addition to the greatest increase in number of claims, the 55-64 age group also had the greatest rate increase from 2009 to 2013 (20.9%; $P = 0.0008$) (Figure 3).

Discussion

The results from this analysis show that the rate of prescription opioid claims in the MN APCD increased from 61.2 claims per 100 insured Minnesotans in 2009 to 67.6 claims per 100 insured Minnesotans in 2013; these rates rank among the lowest in the United States. It is important to remember that the rate and counts of prescription opioid claims from the MN APCD may not represent rates of all Minnesotans because of data that are not reported to the MN APCD (e.g. care provided to the uninsured, care covered by certain federal programs, such as the VA and IHS, etc.). However, the MN APCD does contain claims for about 89% of Minnesotans with insurance coverage.

Rates for prescription opioids vary considerably from state to state. For the United States, 2012 prescription opioid data were divided into quintiles to group states by their rates of opioid claims. The

results show that Alabama, Tennessee, West Virginia, Oklahoma, and Kentucky had the highest rates of opioid claims, which ranged from 128 to 143 per 100

FIGURE 2

The Greatest Increase in Prescription Opioid Claims was Among the 55-64 Age Group

Age range	2009	2013
15-24	203,924	195,682
25-34	376,268	417,969
35-44	467,708	498,539
45-54	684,670	725,983
55-64	521,436	692,556
65-74	328,677	420,744
75-84	260,576	270,400
85+	197,240	189,286

population. States in the middle quintile had rates of prescription opioid claims that ranged from 85 to 102 per 100 population. The lowest rates of opioid claims were in New Jersey, New York, Minnesota, Hawaii, and California, which ranged from 52 to 63 per 100 population.

The greater use of prescription opioids by women than by men has been previously reported and is consistent with higher self-reported prevalence of pain. The age trends in opioid claims are also consistent with a general increase in pain that comes with age. The greatest number of—and rate increase in—prescription opioid claims were seen among middle-aged insured Minnesotans (45-64 years) and not among the oldest age groups (>65 years). This suggests that these middle-aged insured Minnesotans are potentially using greater numbers of prescription opioids following surgery, receiving more chronic pain diagnoses, or obtaining more pain management by physicians. However, these middle-aged individuals also have the greatest number of drug overdose deaths, which have been primarily attributable to prescription opioids. The number

of drug overdose deaths should elicit concern and an examination of the risk and benefits of prescription opioids for pain versus alternative non-opioid treatment options (e.g. physical therapy, acupuncture, non-steroidal anti-inflammatory drugs) that carry a lower risk of negative side effects, such as dependence and overdose.

In Minnesota, rural regions in the northeast, northwest, and central parts of the state had the highest rate of opioid claims. Compared with urban counties, rural counties across the United States have seen a greater increase in opioid misuse, diversion, and death. A number of factors likely account for this, including increased sales of prescription opioids, which allows for greater opportunity for misuse or diversion; provider shortages, particularly in the area of pain management; an older and sicker population that resides in rural areas who may use prescription opioids for chronic disease and pain management; and fewer substance use disorder treatment options.

Prescribers should be aware of these findings and screen people using prescription opioids for factors that may signal nonmedical use or a substance use disorder. Recommendations include using the Screening, Brief Interventions, and Referral to Treatment (S-BIRT) practice, as well as a review of the prescription monitoring program database. Additionally, prescribers are encouraged to review the CDC Guidelines for Prescribing Opioids for Chronic Pain and other resources that address factors to consider when prescribing opioids. The medical community can prevent opioid misuse and substance use disorder by altering prescribing practices to limit the supply of prescription opioids.

A number of next steps and further analyses are planned for these data. This includes:

- Examining prescriber information to identify medical specialties in Minnesota that may be more or less likely to

prescribe opioids and comparing with national findings.

- Examining co-occurring prescriptions for opioid and benzodiazepines, as this combination of drugs has a combined additive depressant effect that increases the risk of overdose. This combination has also been noted on death certificates for drug overdoses in Minnesota.
- Analyzing prescription opioid dosage data, as higher dosages of prescription opioids have been associated with higher risk of overdose and death and have not been shown to reduce pain over the long term. This includes converting each prescription opioid to the morphine milligram equivalent (MME) to allow for equal comparisons in opioid dosage between categories and over time.

Conclusion

Although the rates of opioid prescriptions among insured Minnesotans are low compared to other states, they increased 10.5% from 2009 to 2013. The increase was greatest among insured Minnesotans aged 55-64 years (33% increase). Due to the risk of misuse and addiction, prescribers and patients should be properly trained and understand the risks and benefits of opioids, as well as become aware of alternative treatments for pain. Education should focus on rural prescribers and middle-aged adults due to the corresponding high rates of claims. The Minnesota Prescription Monitoring Program (PMP), which began collecting data in 2010, is another tool prescribers can use to reduce opioid misuse and high-risk co-prescribing in Minnesota. Screening of patients for all substances, including opioids, using S-BIRT to identify and then refer to treatment those at risk, should be promoted as a standard of care.

Current initiatives to improve opioid prescribing in Minnesota include the Opioid Prescribing Improvement Program (OPIP) and the Opioid Prescribing Work-

FIGURE 3

The Rate of Claims (per 100 insured Minnesotans) decreased in the 85+ Year Age Group, but Increased the Greatest in the 55-64 Year Age Group

Age range	2009	2013
15-24	30.24	28.52
25-34	61.18	64.67
35-44	76.62	89.18
45-54	97.45	111.99
55-64	100.74	121.77
65-74	88.05	95.39
75-84	110.15	112.69
85+	170.94	159.04

group (OPWG). These initiatives aim to reduce opioid use disorders among Minnesotans enrolled in Minnesota Health Care Programs. **MM**

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Preventing Obesity With Eating Right (P.O.W.E.R.): A Medical Group Visit Program to Promote Healthy Lifestyle and Weight Loss in an Underserved Urban Population

Laura Palko, B.A., Valerie Mee, M.P.H., Francisco E. Ramirez, M.D., Allen Williams, B.S., Petra Duran, B.S., Elizabeth Driscoll, R.D., Nicole Alexander, M.D., Nina Parkin, M.T. MPH, Jasmine Eugenio, M.D., Martin Lee, Ph.D., CSat, CSat, Theodore C. Friedman, M.D., Ph.D.

Research Question
Can a lifestyle-modification program in the form of a medical group visit effectively lead to weight loss and lower hemoglobin A1c (HbA1c) levels amongst obese patients in an urban underserved area?

Demographics
• 122% of respondents are below Federal Poverty Level
• 46% of respondents report difficulty accessing healthcare
• Higher rates of DM, HTN and Obesity than rest of LA county

Table 1: Patient Demographics

Demographic	n
Total Participants (n)	420
Gender by Race/Ethnicity	
Hispanic	210
Black	100
White	100
Asian	10
Other	10
Insurance by race	
Medicaid	310
Medicare	10
Private Insurance	10
Uninsured	10
Other	10
Special group visit	10
Special group visit	10
Special group visit	10
Special group visit	10

Results
• 281 patients' weight data used
• Significant weight loss at 3 months (p=0.0004)
• Significant weight loss at the final visit (p<0.001)
• 304 patients' A1C values were analyzed
• Significant HbA1c drop at 3 months (p=0.0005)
• Significant HbA1c drop at 6 months (p=0.01)
• HbA1c drop was associated with weight loss at the 3-month time frame (p=0.045)
• Higher attendance correlated with significantly higher percentage of weight loss (Pearson correlation 0.32) (p<0.001)
• 5% of weight at 3 months
• Spanish-speaking participants were more likely to lose at least 5% of weight at 3 months
• Spanish-speaking and Hispanic patients had more significant HbA1c drop than Black and English class patients.

Table 2: Overall Weight Loss & HbA1c drop at 3 months and at final visit

Baseline	Weight (Mean (SD))	Weight % change	A1C (Mean (SD))	A1C % change	p-value	95% CI	Correlation
Baseline	177.1 (37.1)		10.1 (2.1)				
3 months	167.1 (37.1)	-5.6% (SD 3.1)	8.1 (2.1)	-19.8% (SD 3.1)	<0.0005	(-7.2, -8.0)	0.32
Final visit	157.1 (37.1)	-11.3% (SD 3.1)	6.1 (2.1)	-39.6% (SD 3.1)	<0.0001	(-10.0, -12.6)	0.32

Discussion
• Group medical visits

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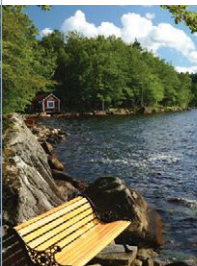


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FARLEY, MD

To appreciate this case report, the reader must go back almost 60 years and place him or herself in the midst of a busy city hospital.

At this time at the Minneapolis General Hospital, there were no ventilators and no dialysis machines. No CT, no MRI, no body scanners. “Good” post-operative care consisted of vigilance, hands-on assistance to promote coughing and clearing of the airway, encouragement to move arms and legs, scrupulous wound care and daily blood studies. Some advanced hospitals had one or two ventilators and a few of

the Kolff artificial kidneys, but none were available at The General.

It was the dawn of daring vascular surgical procedures spurred on by MASH units during the Korean War. Our chief of surgery at The General was Claude R. Hitchcock, a talented and energetic surgeon who had recently graduated from the surgical program at the University of Minnesota. The renowned Owen Wangenstein, who headed that program, was an outstanding teacher who instilled great confidence in his protégées, particularly in stretching the limits of surgery to the maximum. “It can’t be done” was not in his surgical playbook. That was Hitchcock’s mantra as well, and it led him to undertake the surgical excision of an enormous abdominal aortic aneurysm in a patient referred to him from South Dakota.

At the MGH then, abdominal aortic homografts harvested from cadavers were used to replace excised abdominal aortas, and we chose one of suitable size for this patient. Although homografts were soon to be replaced by Dacron and Teflon prosthetic grafts, the homograft had one distinct advantage in that it was essentially impermeable, hence blood loss was minimal.

The operative procedure performed by Hitchcock and his chief resident involved occluding the abdominal aorta temporarily above the renal arteries with the tangential Satinsky clamp. This facilitated the procedure, but the loss of flow to the kidneys—though temporary—proved to be a major factor in the development of postoperative renal shutdown.

The patient’s postoperative course went well with the exception of a diminished urine output and simultaneously a rising BUN and Potassium(K+). Hitchcock became alarmed and made a call to the University to see if we could have the patient transferred for dialysis with their Kolff

“kidney.” For whatever reason (perhaps too much demand for the University’s single machine), this was not possible. The patient herself was eating and recovering in all respects except for her poor renal function. With her serum potassium reaching dangerous levels, Hitchcock called in for consultation his old friend and fellow surgeon Bernard Zimmerman.

I remember well the two doctors standing by the patient’s bedside on the Women’s Ward and discussing her uremic situation.

“It doesn’t look good Hitch (Hitchcock’s nickname during his residency).”

“I’ll welcome any suggestion, Barney.”

Then Zimmerman made the crucial suggestion: “Why not try The Chief’s old standby for renal shutdown?”

“What was that?”

“Stop all protein intake. Then offer butterballs and popsicles and have patience.”

The cook in The General’s kitchen made up the butterballs (a bit of butter, cinnamon and some other ingredient that gave them substance—but no protein, which would have worsened her uremic condition). A junior surgical resident (the author) went to the grocery store on the corner of Park Avenue and Sixth Street for a supply of popsicles. These two items of oral intake were offered to the patient. She cooperated and we waited. The rate of rise of the patient’s BUN and serum potassium slowed and, sure enough, renal function gradually returned. The patient recovered and returned to her home.

Is there value in this case? Perhaps, but only if you are in the position of having a patient with uremia and without means of dialysis. Then it might help to remember “butterballs, popsicles and patience.” **MM**

Harrison Farley, a retired surgeon, has written many accounts of his days at Minneapolis General Hospital.

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