



alumni

2022 • Issue 2

Telemedicine • 04
▲ Rare pediatric cancer • 18
Transforming transplant • 28

Letter from the secretary-treasurer

It's an exciting time on Mayo Clinic campuses — and academic medical center campuses everywhere — as we welcome new learners from around the world. At Mayo Clinic, we welcome approximately 800 new residents and fellows in Rochester, Arizona and Florida. About 16 residents will head to Mayo Clinic Health System campuses in Eau Claire and La Crosse, Wisconsin, and Mankato, Minnesota, to experience community practice. We also welcome about 100 new medical students between Rochester and Arizona.

We are delighted to embrace and guide these learners, many who are experiencing Mayo Clinic for the first time and will eventually graduate to join our worldwide alumni family of more than 34,000 members.

The technological advancements and practice models these learners will experience are very different from the ones I used as a learner — patient access to their medical information, remote visits, artificial intelligence and more. While technologies may change, the unique and treasured Mayo Clinic values remain the same. As everyone who has ever worked or trained at Mayo Clinic can recite without hesitation, “The needs of the patient come first.” I challenge you to name an organization whose mission statement is more known, practiced or universally respected.

Speaking of advancements, the transplant story on page 28 describes aspects of the future of transplant medicine and ways we will care for patients that are almost hard to imagine. That Mayo Clinic is taking these bold steps to alleviate the organ shortage problem is impressive and inspiring.



M. Molly McMahon, M.D.

M. Molly McMahon, M.D. (ENDO '87)
Secretary-Treasurer
Mayo Clinic Alumni Association
Division of Endocrinology, Diabetes,
Metabolism, and Nutrition
Mayo Clinic in Rochester

About the cover: Candace Granberg, M.D. (U '10), Department of Urology at Mayo Clinic in Rochester, leads a multidisciplinary team that treats children who have genitourologic cases of rhabdomyosarcoma. She fights for her patients and competed on “American Ninja Warrior” to raise awareness about the disease.

Women, including Dr. Granberg, make up about 10% of urologists in the U.S.

Contents

4 **Telemedicine, everywhere**

Technology brings stroke experts and specialists to the bedside, no matter where it is

18 **One good shot**

Rare expertise for rare pediatric cancer

28 **Transforming transplant**

Joining forces to accelerate discovery to practice

36 **Native American patient care**

Wednesdays at PIMC

46 **On the shoulders of giants**

Recognizing and nurturing potential

48 **Alumni spotlight**

Former fellow concludes term as president of Royal College of Surgeons in Ireland

52 **Mayo Clinic Update**

News & obituaries



Illustrations on pages 28 and 35 by Tobias Wüstefeld.

Clarification: We reported in issue 4 2021 that Thomas Viggiano, M.D. (GI '80), Division of Gastroenterology and Hepatology, Mayo Clinic in Rochester and a Barbara Woodward Lips Professor, was recognized by the Association of American Medical Colleges. The name of the award he received is the 2021 Award for Excellence in Medical Education — the association's highest award for lifetime achievement in medical education. Congratulations, Dr. Viggiano!

COVID-19 photography disclaimer: Some photos were taken before the pandemic and do not demonstrate proper pandemic protocols. In others, subjects were in nonpatient care, nonpublic settings and were, therefore, in compliance with Mayo Clinic's latest COVID-19 safety guidelines while unmasked. Please follow all recommended CDC guidelines for masking and social distancing.





Telemedicine, everywhere

**Technology brings stroke experts and specialists
to the bedside, no matter where it is**

Telestroke enterprise medical director Bart Demaerschalk, M.D., and a team of 30 Mayo Clinic cerebrovascular specialists pop up on video screens around the region and country to identify urgent transfer needs and optimize use of thrombolytics.

*“We continue to innovate to **provide outstanding stroke care** to those we serve and to **level the playing field** so a patient’s ZIP code doesn’t determine their outcome.”*

– Bart Demaerschalk, M.D.

The pandemic brought a flurry of telemedicine services in most every discipline and part of the country. Mayo Clinic’s learning curve was short because it had initiated telemedicine much earlier. On its Arizona campus. In the form of telestroke. In 2007. The maturity of that program and its many offshoots made the transition to widespread telemedicine easier and faster.

The force behind the Mayo Clinic Telestroke Program was **Bart Demaerschalk, M.D.** (N ’01), who serves as its enterprise medical director. He says the program originated to deliver expert time-sensitive, evidence-based specialty care to those without access to it.

“Small rural community hospitals — often in remote locations — have no or limited access to neurologists and

neurosurgeons and, therefore, must transport stroke patients in situations where time is critical. Too often, it was too late for the patients. The Mayo Clinic Telestroke Program provides comprehensive expert emergency stroke care to hospitals and medical centers that don’t have an around-the-clock, in-person stroke team.”

Dr. Demaerschalk says a patient in Cannon Falls, Minnesota, can be treated at the local hospital rather than transferred 43 miles away to Rochester for care. “Our goals are to optimize thrombolytic use in hospitals, shorten hospital lengths of stay through advanced care whenever possible, avoid unnecessary transfers, and identify urgent transfer needs such as endovascular thrombectomy in ischemic stroke or surgical evacuation in hemorrhagic stroke.”

Telestroke became an initiative across Departments of Neurology

on all Mayo Clinic campuses in 2016, with a thrust on streamlining operations with a single centralized activation process and staffing model. Today, more than 30 board-certified cerebrovascular specialists provide service to 30 clients, including Mayo Clinic Health System hospitals in Minnesota and Wisconsin, some Mayo Clinic Care Network members, and several other hospitals and health systems. A Mayo Clinic telestroke neurologist is on duty at all times, with no competing responsibilities and with backup neurologists available for simultaneous emergencies.

Calls come in from member hospitals to the Mayo Clinic Midwest Admission Transfer Center, with the originating facility having identified a potential stroke in an emergency department or inpatient setting and performed a diagnostic protocol. A nurse coordinator takes the call





Deena Nasr, D.O. (N '15, CBVD '16), Department of Neurology at Mayo Clinic in Rochester, consults on telestroke service with David Claypool, M.D. (MED '83, I '86), Department of Emergency Medicine at Mayo Clinic in Rochester, who also provides emergency medicine care at Mayo Clinic Health System in Red Wing, Minnesota.

Notably, Mayo Clinic **telestroke patient morbidity and mortality outcomes are approximately the same** as those of patients treated at **stroke centers on Mayo Clinic campuses.**

and activates a telestroke provider consultation. The originating facility places a telemedicine robot cart at the patient's bedside, and a video connection is established between the two locations. After the Mayo Clinic neurologist examines the patient by video and discusses the medical history and results of neurological exams with the referring physician, the two providers discuss the recommendations by phone. Advanced neuro-imaging software helps the telestroke physician make rapid calculations of infarct volume

and penumbra and determine if the patient needs to be transferred for a higher level of care — to a Mayo Clinic or regional stroke center or, in the case of mechanical thrombectomy, to a comprehensive stroke center or thrombectomy-capable stroke center.

This process happened 2,175 times in 2021. Notably, Mayo Clinic telestroke patient morbidity and mortality outcomes are approximately the same as those of patients treated at stroke centers on Mayo Clinic campuses. "This track record



Bart Demaerschalk, M.D., assesses a patient for stroke during the prehospital time in an ambulance. This service helps to speed up treatment upon arrival at a hospital.

demonstrates that stroke care can be capably provided for large numbers of patients in their home communities,” says Dr. Demaerschalk.


In a further refinement of hospital door to treatment time, Mayo Clinic has equipped ambulances with telemedicine technology in partnership with six fire department EMS agencies in Jacksonville, Florida, and Phoenix, Arizona. Telestroke specialists can remotely assess patients during this traditional prehospital downtime, saving vital minutes to expedite treatment when

neurons are dying. This approach can improve stroke recognition among emergency medical services personnel, improve triage accuracy and speed up treatment upon arrival at a hospital.

“Time is brain,’ as they say, meaning every minute after a stroke before treatment is initiated reduces the chances of an optimal outcome,” says Dr. Demaerschalk. “We continue to innovate to provide outstanding stroke care to those we serve and to level the playing field so a patient’s ZIP code doesn’t determine their outcome.”

Telestroke leadership

- **Bart Demaerschalk, M.D. (N '01),** enterprise medical director, Mayo Clinic in Arizona
- **Kevin Barrett, M.D. (TY '03, N '06),** medical director, Southeast Region, Mayo Clinic in Florida
- **Deena Nasr, D.O. (N '15, CBVD '16),** medical director, Midwest Region, Mayo Clinic in Rochester
- **Cumara O'Carroll, M.D. (TY '10, N '13, CBVD '14),** medical director, Southwest Region, Mayo Clinic in Arizona

A portrait of Elizabeth Fogelson, M.D., a woman with long, wavy blonde hair and blue eyes, looking slightly to the right of the camera with a gentle smile. She is wearing a light-colored, possibly striped, top. The background is dark and out of focus, suggesting an indoor setting with wood paneling.

“Our level of comfort in administering thrombolytic medication is enhanced if a Mayo Clinic neurologist concurs.”

– Elizabeth Fogelson, M.D.

TELESTROKE IN ACTION

Elizabeth Fogelson, M.D. (EM '15), an emergency medicine physician at Mayo Clinic Health System in Austin and Albert Lea, Minnesota — 41 and 62 minutes from Rochester, respectively — relies on Mayo Clinic's telestroke services multiple times a month. “The service is fast and helps us provide the most up-to-date lifesaving care,” she says. “Our level of comfort in administering thrombolytic medication is enhanced if a Mayo Clinic neurologist concurs. The criteria to qualify for a telestroke activation at our facilities changed recently from six to 24 hours of symptom onset. This allows for patients to potentially undergo mechanical thrombectomy up to 24 hours from onset of symptoms if they are a candidate based on specific evidence-based criteria. We don't have an on-call neurologist so, without the support of Mayo Clinic telestroke

neurologists, we may not be able to provide this potentially life-changing procedure and promptly transfer those patients to a stroke center for care.”

Dr. Fogelson says there's value in having another set of eyes on the patient via the telemedicine device. “The telestroke physician can see and talk to the patient and team members, which complements patient care and improves patient comfort with the plan.”

Working in community emergency medicine and having easy access to Mayo Clinic's telemedicine services piqued Dr. Fogelson's interest in this discipline. She's now the associate medical director for tele-emergency medicine at Mayo Clinic in Rochester. “Critically ill patients present to our smaller hospitals that often do not have critical care, anesthesiology, neurology, neonatology or pharmacy specialists,” she says. “Emergency care



“Dr. Demaerschalk at Mayo essentially wrote the book on best practices for teleneurology for the American Heart Association. This says a lot about why we use Mayo’s telestroke services.”

– Paul Glisson, D.O., Baptist Health, Pensacola, Florida

in a rural community can be isolating, and we greatly appreciate having telemedicine services available to us.”

Jeffrey Daniel, M.D., director of emergency services at Tuba City Regional Health Care Corporation in Tuba City, Arizona, also looks to Mayo Clinic telestroke services in lieu of real-time neurologist coverage. “Most of us are very comfortable recognizing and diagnosing acute stroke but less comfortable making decisions to give tPA if the cases aren’t clear cut,” he says. “For those situations and when patients aren’t candidates for tPA but may be for clot retrieval, having real-time neurology telestroke consultation is crucial for us to provide optimal care.

“We’re an Indian Health Services hospital, and our patients are largely from the Navajo Nation. They’re hit hard by stroke and vascular diseases. It means a lot to our patients and their families to know we’re working with Mayo Clinic neurologists. We can assure them they’re getting excellent stroke care, and we can go home at the end of the day knowing we’ve accomplished what we set out to do — make a difference in the lives of our patients.”

Unlike these hospitals, Mayo Clinic Health System in Eau Claire, Wisconsin, has full-time general neurologists, but using Mayo Clinic’s telestroke services allows the in-house neurologists to focus on the clinical practice. At the same time, having dedicated telestroke experts a phone call away has improved consistency in acute stroke care and treatment.

Paul Glisson, D.O., vice president of medical affairs, and Lydia Toenes, stroke coordinator, at Baptist Health in Pensacola, Florida — part of Mayo

Clinic Care Network — echo how the Mayo Clinic partnership ensures the continuum of expert-led, time-sensitive care.

“Having immediate access to a specialist’s recommendation for the treat-or-not-treat thrombolysis or thrombectomy decision is priceless,” says Dr. Glisson. “We also appreciate the additional recommendations for follow-up therapy and care at discharge following a stroke. If a stroke is not suspected, Mayo also will advise what may be needed to determine the patient’s problem. Dr. Demaerschalk at Mayo essentially wrote the book on teleneurology best practices for the American Heart Association. This says a lot about why we use Mayo’s telestroke services.”

Telestroke by the numbers

- **24/7/365 acute telemedicine support for assessment, diagnosis, early treatment and triage disposition to a center with the appropriate level of care, whether that is remaining at the referring hospital or transferring to a primary stroke center, thrombectomy-capable center or comprehensive stroke center**
- **Has served 32k patients**
- **30+ cerebrovascular neurologists**
- **Serves 30 locations**
- **98% accuracy for diagnosis and clinical decision-making**
- **65% of patients treated at community hospitals**
- **65% reduction in spoke-to-hub patient transfers**
- **10x increase in use of thrombolysis**
- **Less than 7-minute median response time**
- **Morbidity and mortality outcomes similar to those achieved at Mayo Clinic stroke centers**

Seeding the telestroke landscape

“Having telestroke experience as a graduating fellow was immeasurably valuable and is a huge win for institutions wanting to build successful programs to transform care. It enabled me to build a large telestroke system at WVU.”

– Amelia Adcock, M.D. (right)

Mayo Clinic medical students learn about telestroke during their neurology rotations, and the exposure ramps up during residency. The telestroke fellowship program has resulted in dozens of Mayo Clinic-trained physicians populating the telestroke world and sharing Mayo Clinic experience and expertise around the U.S. Here, we focus on several former trainees now practicing telestroke.

IN WEST VIRGINIA

Amelia Adcock, M.D. (TY '10, N '13, CBVD '16), is the director of the WVU Center for Teleneurology and Telestroke at West Virginia University in Morgantown. She was trained in telestroke as a resident and fellow at Mayo Clinic in Arizona.

“I see telemedicine as a tool to connect systems, care and follow-

up — a way to expand access to neurologic care,” she says. “As a fellow, I completed a project showing how we could use remote tools to perform exams on patients who have decreased consciousness. This evidence-based tool kit allows us to conduct coma exams with telemedicine. Having telestroke experience as a graduating fellow was immeasurably valuable and is a huge win for institutions wanting to build successful programs to transform care. It enabled me to build a large telestroke system at WVU.

“West Virginia is a low-resource state with high rates of cardiovascular morbidity and mortality, and it lacks neurology coverage for most of the state. Teleneurology and telestroke have allowed us to see patients where they are and transfer them as needed. We’ve expanded from seven to 30 sites in our network. We see teleneurology and telestroke patients. I share infor-

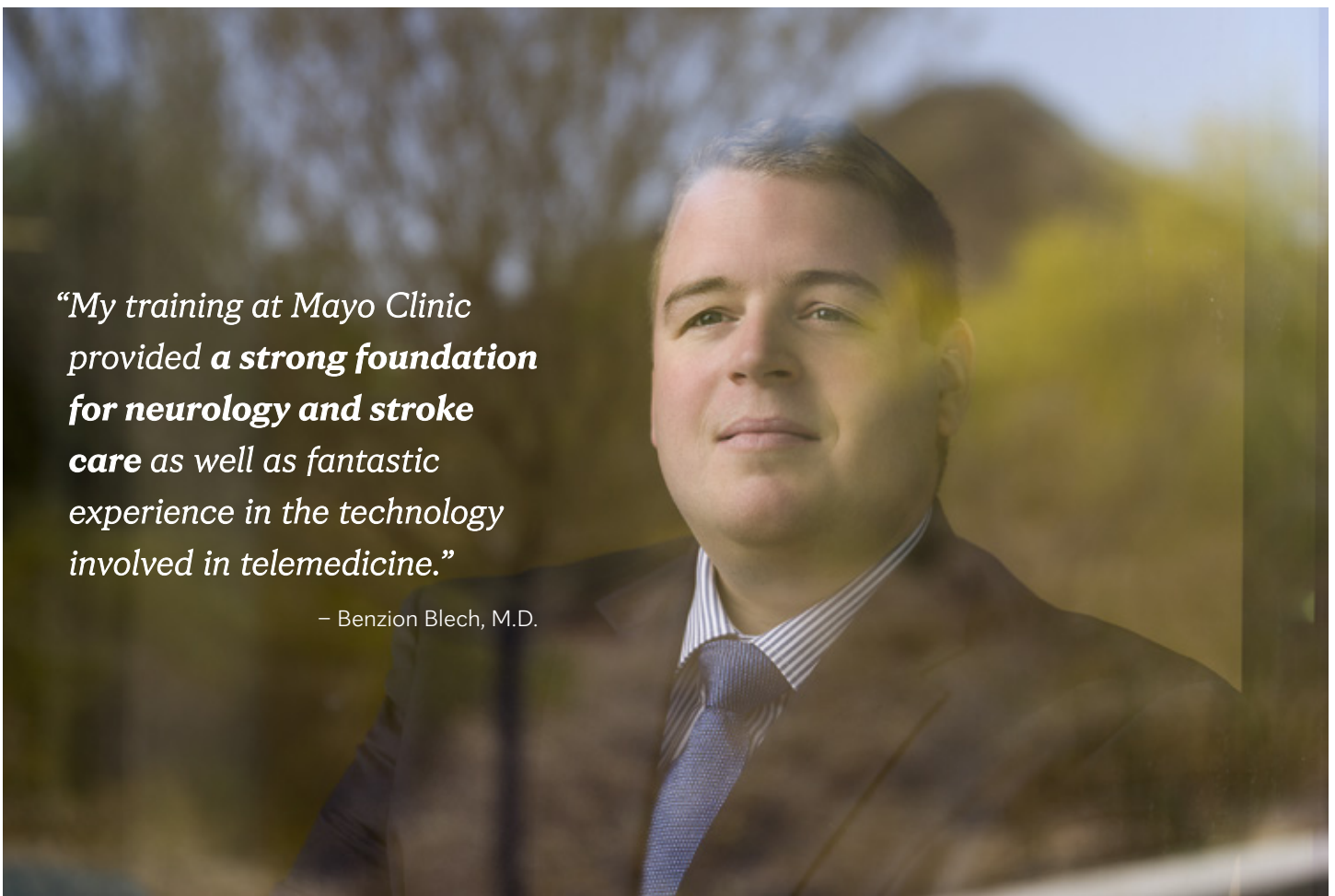
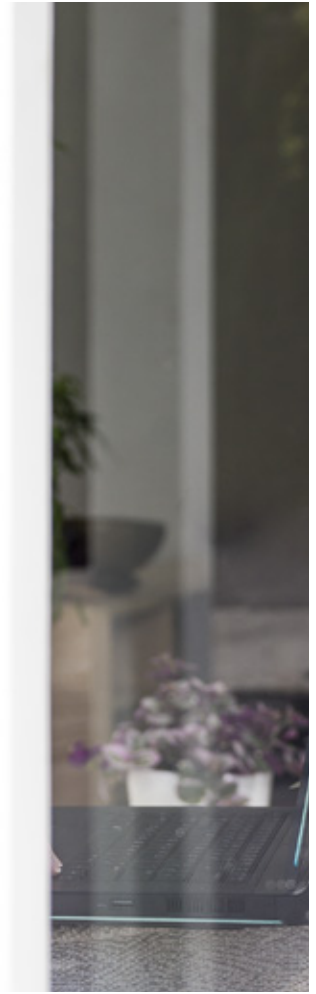
mation with telestroke leaders from two other institutions in West Virginia so we can learn from each other. It’s fulfilling to be able to impact a person’s care at an acute moment.”

Dr. Adcock benefits from a grant from the Health Resources and Services Administration (HRSA), studying acute telemedicine in critical access emergency rooms with a goal of seeing how telemedicine can work for acute settings in rural health systems. She is building a stroke fellowship program to train and recruit more vascular neurologists to improve care in her state.

“Working at the statewide and institutional levels, I hope to develop and mature what will be a sustainable telemedicine program to address the lack of access many of our patients face,” she says.

Dr. Adcock also is a supplemental physician for Mayo Clinic’s telestroke





*“My training at Mayo Clinic provided a **strong foundation for neurology and stroke care** as well as fantastic experience in the technology involved in telemedicine.”*

– Benzion Blech, M.D.

“Every telestroke network operates a little differently. I pass along pearls of wisdom from my training at Mayo.”

– Rachel Carlin, M.D. (at left)

program. She says she enjoys remaining connected to Mayo Clinic as a supplemental physician and colleague. “I like seeing what Mayo Clinic is doing in this area and implementing successful strategies as well as sharing innovations from our own program,” she says. “I reach out to my Mayo colleagues when I have challenging cases. The Mayo culture is all about communication and collaboration, and I pay that spirit forward in my relationships with other telestroke leaders.”

IN WASHINGTON

Like Dr. Adcock, **Rachel Carlin, M.D.** (TY '17, N '20, CBVD '21), learned about telestroke during her residency and fellowship training at Mayo Clinic in Arizona. She was intrigued by being able to help stroke patients who wouldn't otherwise have had access to Mayo Clinic's expertise.

“Not all stroke fellowships include telestroke training. When I looked for a neurology position after training, having that on my CV was important as was the supervised telestroke experience I'd had during my fellowship,” she says. “I felt completely ready to jump in on telestroke service.”

Dr. Carlin recently joined Multicare Capital Medical Center in Olympia, Washington. She, too,

provides fill-in coverage for Mayo Clinic's telestroke program as a supplemental physician.

“Every telestroke network operates a little differently,” she says. “I share with others who provide telestroke care the pearls of wisdom from my training at Mayo.”

THROUGHOUT THE U.S.

Benzion Blech, M.D. (TY '17, N '20, CBVD '21), also completed his training at Mayo Clinic in Arizona. In fact, he chose Mayo Clinic for residency, in part, because of its robust telestroke program.

“I have a background in computer science and was involved with web application development and technology during medical school. Mayo Clinic struck me as a place with a lot of technological advancements in the clinical world. When I interviewed for residency, I saw a telestroke robot in the emergency department at Mayo Clinic in Arizona. I was fascinated and knew I wanted to train there. As a resident, I worked on multiple telestroke research projects with Dr. Demaerschalk and others. As a fellow, I got hands-on telestroke clinical experience, including using that telestroke robot all the time.”

Not much has changed in that Dr. Blech continues to be involved

with telestroke robots every day. He works for TeleSpecialists, a tele-neurology and telestroke company that provides neurology services to hospitals across the U.S. He works from home in Phoenix, Arizona. He turns on a camera on his computer to connect with clients and is in front of the patient in minutes. He sees approximately 15 patients per day and enjoys the lifestyle of working from home and being around his wife and children.

Dr. Blech also gets to be involved in research and education; the company provides CME courses and grand rounds and lectures for residents at hospitals in its network.

“My training at Mayo Clinic provided a strong foundation for neurology and stroke care as well as fantastic experience in the technology involved in telemedicine. At Mayo, all of the teleneurologists used the same platform and technologies, which allowed us to focus on learning the art of telemedicine instead of the technology itself. At TeleSpecialists, each of our clients uses different software and hardware technologies, so we have to be familiar with their electronic health records and systems. My interest in technology comes in handy. I feel like this field is a natural fit for me, and I see myself working as a teleneurologist for a long time to come.”

Offshoot

*“Our fellows are trained to be able to evaluate and treat patients in person and with telemedicine because **the need for teleneonatology is so great, especially for patients who live in smaller communities that don’t have neonatal critical care services.**”*

– Jennifer Fang, M.D.



Telestroke was Mayo Clinic’s initial telemedicine program and is the “parent” to multiple offspring programs, including teleneonatology, teleOB/GYN, teleneuro critical care, teleEM, telepalliative medicine and teleICU. What unites these programs is the ability to provide time-sensitive Mayo Clinic expert care in medical emergencies. Here, we focus on teleneonatology, one of the most mature of the telemedicine offspring.

TELESTROKE PAVED THE WAY FOR TELENEONATOLOGY

When **Jennifer Fang, M.D.** (MED ’02, PDNE ’17), Division of Neonatal Medicine at Mayo Clinic in Rochester, was a fellow, a particular case led her to

develop Mayo Clinic’s teleneonatology service. A patient had an emergency preterm delivery at a Mayo Clinic Health System community hospital. The care team contacted Mayo Clinic in Rochester for help. Within minutes **Christopher Colby, M.D.** (PD ’03), now chair of the Division of Neonatal Medicine, was on the phone, instructing the team in neonatal resuscitation. To provide the best care possible, he recognized that he needed to see the very premature baby. He connected digitally, visually assessed the baby and further helped the local team. The baby was resuscitated and transferred to Mayo Clinic.

That was the first unofficial teleneonatology case — the first of more than 700 official cases since 2013. Mayo Clinic teleneonatology

serves 19 community hospitals in two states, including all Mayo Clinic Health System Midwest hospitals. Program leadership also consults with organizations in the U.S. and other countries to help them design and implement teleneonatology programs. The program’s goal is to make sure any baby born at any hospital has access to a neonatologist.

Dr. Fang and her colleagues leaned on the telestroke team for guidance in establishing the teleneonatology program. “They helped us successfully implement and expand our program, including sharing their success factors and anticipating roadblocks,” says Dr. Fang. “Dr. Demaerschalk has been a mentor for our team across the three shields of practice, education and research. In addition to our



clinical program, we have a three-year teleneonatology curriculum for neonatal–perinatal fellows. We have published much of the leading research on teleneonatology and are poised to perform the first large multicenter clinical trial evaluating the impact of teleneonatology on early neonatal health outcomes.”

Today, nine board-certified neonatologists at Mayo Clinic in Rochester provide the service for patients at the point of delivery and in the first several days of the baby’s life.

TELENEONATOLOGY IN ACTION

In 2019, Lizzie Stoltz of Bloomer, Wisconsin — population 3,500 — got firsthand experience in teleneonatology. She had planned to

deliver her baby at Mayo Clinic Health System in Eau Claire, Wisconsin, 30 minutes from home. When she went into premature labor at 30 weeks’ gestation, she had no choice but to go to Mayo Clinic Health System — Chippewa Valley in Bloomer by ambulance. That location doesn’t have labor and delivery or neonatology services. Little did Stoltz know at the time, but hers would be the first baby born at the hospital in years — and the first to be born with the support of teleneonatology.

The emergency department was staffed by a physician assistant, who summoned the on-call family medicine physician, **Phillip Skaar, M.D.** (FM ’06), to the hospital. The Bloomer team contacted Mayo Clinic teleneonatology. **Christopher**

Collura, M.D. (PD ’10, PDNE ’13), helped them prepare for the delivery before the patient even arrived and ordered a Mayo One flight crew to be on site to transfer the baby. Dr. Skaar focused on delivering the baby, and the physician assistant on resuscitating the newborn.

Through the bedside telemedicine device, Dr. Collura guided the physician assistant through resuscitation and stabilization of the 3-pound, 10-ounce baby. Dr. Collura zoomed in on areas he needed to see more closely. The baby was face up and her face badly bruised; she was not crying and was blue and limp. After resuscitation, the baby was placed in a warmer and intubated, and an umbilical line for medication was started. “Short of us standing there with the team, it’s the next best thing,” says Dr. Collura.

Dr. Skaar described the delivery as the most amazing medical situation he’s ever been involved with.

Baby Madelyn, now age 2, was transferred by helicopter to Mayo Clinic in Rochester, where she remained for 44 days. Stoltz says having a set of eyes experienced in neonatal care in the room with her gave her peace of mind.

TRAINING THE NEXT GENERATION

To help make sure babies born at any hospital have access to neonatologists, Mayo Clinic has embedded teleneonatology curriculum in its neonatology and perinatology fellowship programs.

“Our fellows are trained to be able to evaluate and treat patients in person and with telemedicine because the need for teleneonatology is so great, especially for patients who live in smaller communities that don’t have neonatal critical care services,” says Dr. Fang. “Even when those services aren’t offered, emergency situations will happen, and babies will continue to be born requiring advanced resuscitation. Local physicians should have immediate assistance from subspecialists.” •





ONE GOOD SHOT

Rare expertise for rare pediatric cancer

Small bodies. Tiny organs.

Meticulous surgeries.

Experts in rare cancers.

In a nutshell, that's the pediatric rhabdomyosarcoma practice at Mayo Clinic Children's Center in Rochester.

Overall, rhabdomyosarcoma affects only about 350 children per year in the U.S. Some subtypes of the disease have a 70% survival after treatment. Other subtypes have worse prognoses. If the disease recurs, mortality is high. For those reasons, it's imperative to get the right care right away.

Candace Granberg, M.D. (U '10), Department of Urology at Mayo Clinic in Rochester, along with a multidisciplinary surgical team, has operated on several children with rhabdomyosarcoma. Approximately 20% of pediatric rhabdomyosarcoma cases are genitourologic, and some require complex surgery.

"Rare cancers need rare cancer surgery by a team that does it often and well," says Dr. Granberg. "For this particular cancer, which is unforgiving, you get one good shot. You must have negative margins after surgery — confirmed by pathologists examining tissue in the frozen section pathology lab during surgery — with no cancer cells left behind. If that's not the case, there is a much higher chance that the cancer will recur."

Dr. Granberg and her surgical partner, **Patricio Gargollo, M.D.** (U '16), see pediatric patients with primary and recurrent rhabdomyosarcoma. Through a clinical trial, Mayo Clinic offers a cutting-edge treatment option for relapsed disease. Mayo Clinic is the only center in the U.S. to offer a phase I clinical trial that combines surgery with hyperthermic intraperitoneal chemotherapy (HIPEC) to treat relapsed intra-abdominal and pelvic rhabdomyosarcoma for pediatric patients. Surgeons remove all visible tumors and apply heated chemotherapy into the patient's abdomen. Unlike systemic chemotherapy, HIPEC delivers the agents directly to any remaining cancer cells in the abdomen. It's hypothesized that heating the solution may improve drug absorption.

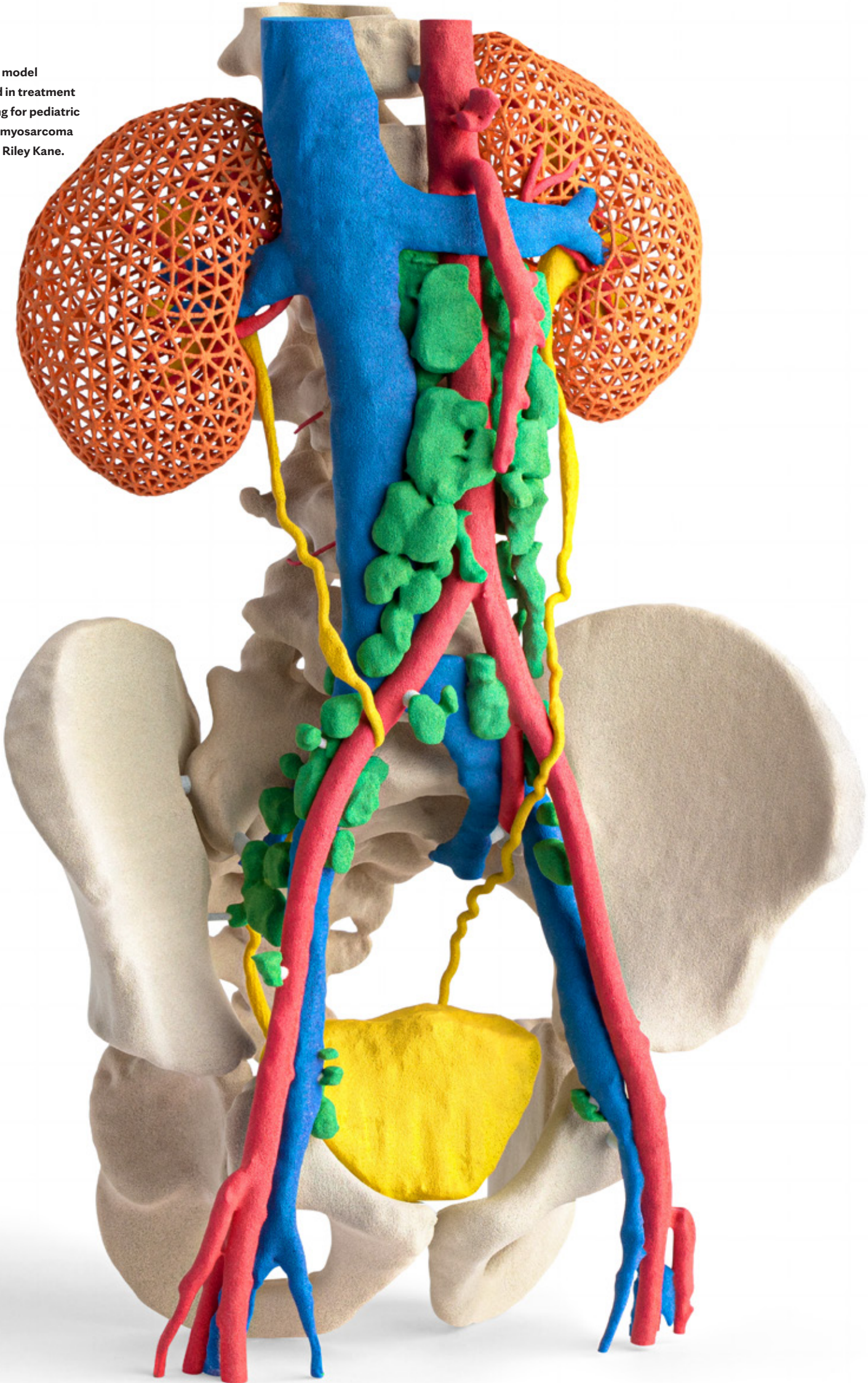
According to **Carola Arndt, M.D.** (PD '89), Division of Pediatric Hematology/Oncology at Mayo Clinic in Rochester, the chemotherapy agents to treat rhabdomyosarcoma remain largely unchanged since the 1970s. HIPEC is an experimental therapy used to attempt to eradicate microscopic cancer cells that may remain after surgery.

No cancer cells left behind after surgery is the goal for pediatric rhabdomyosarcoma. Candace Granberg, M.D. (page 18), and Patricio Gargollo, M.D., see patients with primary and recurrent forms of this cancer. Dr. Granberg says Mayo Clinic is the destination for parents willing to go to the ends of the earth to save their children who have this disease.



SURGEON - DR.	_____
RESIDENT - DR.	_____
PA/PE	_____
ANESTHESIOLOGIST - DR.	_____
IN ROOM ANES PROVIDER -	_____
RN	_____
CST	_____
CSA	_____
ORIENTEE	_____
VISITOR/VENDOR	_____

The 3D model created in treatment planning for pediatric rhabdomyosarcoma patient Riley Kane.



TEAM IN ACTION

Riley Kane (page 24) had surgery for rhabdomyosarcoma at another hospital when he was 8. When his tumor was staged, his physicians determined that his cancer involved lymph nodes in his abdomen. The Pediatric Solid Tumor team from Mayo Clinic met with his oncologist virtually and used 3D modeling to plan the approach to Riley's surgery. He also had fertility preservation using testicular tissue cryopreservation and proton beam therapy at Mayo Clinic, followed by chemotherapy closer to home — in the Twin Cities.

Riley's team included pediatric urologists, a urooncology surgeon, pediatric surgeons, pathologists, pediatric radiologists, pediatric oncologists and radiation oncologists.

"We make sure every specialist the patient may need is at the table," says Dr. Gargollo. "In addition to every possible surgical specialty, we provide fertility preservation and proton beam therapy — both incredibly important for

pediatric cancer patients — and pediatric oncologists who are among the world's leaders in their field. That includes **Dr. Wendy Allen-Rhoades** (PD '20) and **Dr. Carola Arndt**. The families of our patients appreciate having everything under one roof versus a patchwork approach. They can come to us for complex surgical care and get all of their care here or get the rest of their care close to home."

Dr. Granberg says parents also appreciate that Mayo Clinic is studying these cancers so other children's lives can be spared. Research teams at Mayo Clinic preserve patients' tissue, blood and cells in a biobank and are running studies to better characterize these rare tumors so researchers can identify new therapeutic targets.

"Parents will go to the ends of the earth to save their children," says Dr. Granberg. "We're glad to be the destination for pediatric rhabdomyosarcoma treatment. We'll be glad when no parent has to struggle to find the right team to treat their child and cure their cancer."



Pediatric cancer patients have everything under one roof at Mayo Clinic, including pediatric oncologists such as Carola Arndt, M.D., and Wendy Allen-Rhoades, M.D., Ph.D., who are among the world's leaders in their field.



Candace Granberg, M.D., became a public advocate for pediatric rhabdomyosarcoma through her 2019 appearance on "American Ninja Warrior" after a 3-year-old patient died with aggressive disease. "Competitors get to choose a cause to raise awareness for, and I chose pediatric rhabdomyosarcoma. The difficult challenges and unknown obstacles on the ninja warrior course are nothing compared to what my young patients go through. Pediatric cancers overall and rare pediatric cancers in particular get very little research funding or attention. I'll do whatever I can to bring attention and research dollars to this important cause."



According to his mother, Riley Kane never questioned that he'd be OK. He said he could tell Mayo Clinic is the best place in the world because it has golden railings. His mom says it feels good when you know you're at the best place with a team that makes you feel confident and cares for all of you.

Golden railings

Riley Kane, age 9, loves hockey, Marvel movies, Legos, reading and playing outside. He loves dinosaurs and wants to be a paleontologist. He told his mom that he could tell Mayo Clinic is the best place in the world because it has golden railings. He was referring to brass fixtures in the Charlton Building on the Rochester campus.

In 2021, Riley and his family became more familiar with Mayo Clinic than they'd ever imagined after he was diagnosed with pediatric rhabdomyosarcoma at age 8. His primary care provider noticed a lump above the youngster's testicle, and a specialist referred the family to Children's Hospitals and Clinics of Minnesota in Minneapolis. In the

blink of an eye, Riley was in surgery to remove a tumor. A biopsy revealed that the tumor was cancerous. Not only cancerous but a rare cancer.

Tera and Jeff Kane, Riley's parents, were in a state of shock but relieved when physicians at Children's Minnesota referred them to Mayo Clinic Children's Center. "They'd already scheduled an appointment for us," says Tera Kane. "We didn't have any experience with Mayo Clinic but regarded it as a place to go for serious things. We'd seen the PBS documentary about Mayo Clinic and couldn't believe our child was now going there. We were glad this resource wasn't too far away and that it has some of the best experts for this pediatric cancer."

Like the paleontologist Riley aspires to be, Mayo Clinic pediatric cancer physicians and researchers locate, excavate, use specific tools, gather information and evaluate discoveries to better understand their subject matter. Whether it's fossils or cancer, the basic principles are the same.

One of those pediatric cancer experts is Candace Granberg, M.D., Department of Urology at Mayo Clinic. The family met with Dr. Granberg to discuss a care plan for Riley. Additional imaging showed that his cancer was more advanced than they'd known. It had spread to lymph nodes in his abdomen.

In March 2021, the Mayo team led by Dr. Granberg and **Stephen Boorjian, M.D.** (UONC '08), chair, Department of Urology and the Carl Rosen Professor of Urology, removed multiple lymph nodes in an eight-hour procedure that included placement of a port for chemotherapy and removing a small portion of Riley's other testicle to freeze for fertility preservation. While at Mayo Clinic,

Riley commenced more than 10 months of chemotherapy under the direction of **Wendy Allen-Rhoades, M.D., Ph.D.**, Division of Pediatric Hematology/Oncology, and in close collaboration with his physicians at Children's Minnesota. He completed his chemotherapy course close to home. Two months later, Riley began daily proton beam therapy.

The family traveled from home in Rogers, Minnesota, to Rochester — 110 miles each way — Monday through Friday for six weeks for proton beam therapy. He finished treatment at the end of 2021. At a checkup in January, his scans were clear, showing no evidence of cancer. He'll continue to be checked every few months for now and throughout his life for secondary effects of radiation therapy.

The Kanes say they were struck by how well Riley's care was coordinated. "Mayo Clinic makes it easy to be a patient," says Tera Kane. "Everyone knew what other appointments we had, who was on the team and what the plan was. They were approachable and welcomed our questions. We never



Riley Kane was the honorary flag bearer at the Minnesota Wild's annual Hockey Fights Cancer Awareness Night at Xcel Energy Center last fall, when the Wild beat the Ottawa Senators 5-4 in overtime.

Photo used with permission of Minnesota Hockey magazine; chief editor Brian Halverson; photograph by Rick Olson.

“He had an amazing opportunity to work with the best people who could heal him, and he found comfort in that.”

– Tera Kane

felt like we were bothering people because the response was always, ‘I’m glad you reached out.’ The doctors made a point to connect with Riley on a personal level, making sure he knew he was the patient and that his best interests were their greatest concern. Mayo focuses on the whole patient, not just the disease, and makes you feel comfortable and confident in your decision to get care there. Dr. Granberg asked us how we were doing — if we were OK. She cared about us as people, as a family.”

The medical team treated Riley to a trip to the 3D Anatomic Modeling Lab led by **Jonathan Morris, M.D.** (RD ’06, RNEU ’07), to see how the model of his anatomy had been made to guide his surgical team. Tera Kane says the family loved seeing the behind-the-scenes people and technology involved in Riley’s care and how the pieces fit together. “It was heartwarming to see so many people cared about our son and his outcomes. And Riley loves science, so it was extra special.”

Tera Kane shares an anecdote about an experience she had when leaving the parking garage after one of many trips to Rochester for Riley’s proton beam therapy. “Having two kids (including Riley’s younger brother, Owen) in the car on long trips and medical appointments can be trying, and the parking attendant must have noticed. As we approached the pay window, he said, ‘It looks like you’re having a hard day,’ and he let us through without paying. It’s a small thing, but those kinds of gestures happen all the time at Mayo and make such a difference.

“Riley was an average kid before his cancer diagnosis and treatment, but he latched on to all the positive things around him and approached his illness with optimism. He kept pushing forward and knew what he needed to do. He had an amazing opportunity to work with the best people who could heal him, and he found comfort in that. He never questioned that he’d be OK. When you read statistics about Riley’s type of cancer, it’s grim. But when you know you’re at the best place with a team that makes you feel confident and cares for all of you, it feels good.” •



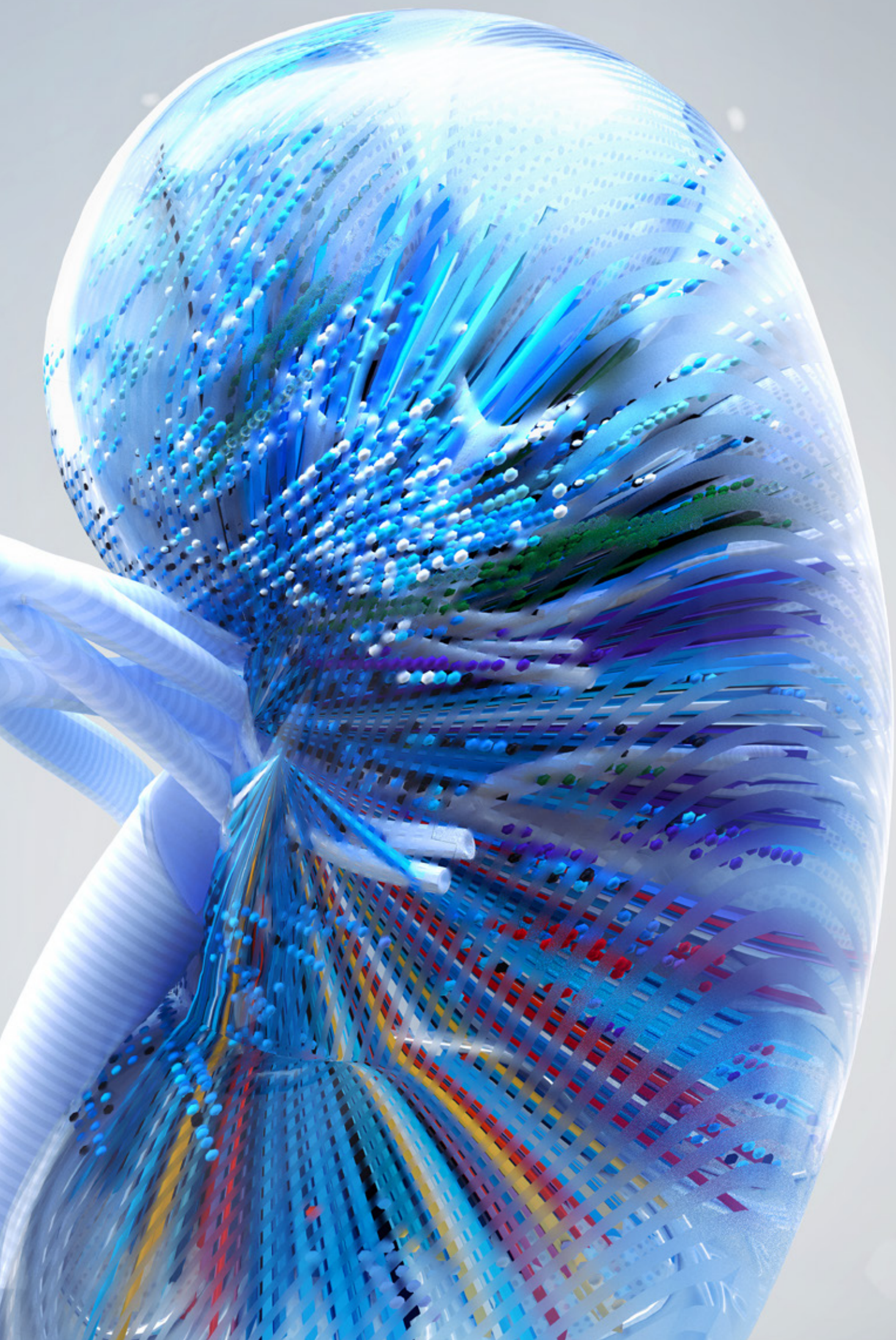


The Kane family at home in Rogers, Minnesota: Tera, Jeff, Riley and Owen.

Transforming transplant

Joining forces to accelerate discovery to practice





*“We cannot solve patients’ clinical needs with currently available methods in transplant medicine. **The solutions lie in doing things that haven’t been done before.**”*

– C. Burcin Taner, M.D.

In 2018, **C. Burcin Taner, M.D.** (S ’04, TRNS ’06), chair of the Transplant Center at Mayo Clinic in Florida, and **Gianrico Farrugia, M.D.** (I ’91, GI ’94), president and CEO of Mayo Clinic — then CEO of Mayo Clinic in Florida, discussed the next steps in Mayo’s transplant programs. Mayo Clinic has had very strong clinical transplant programs, but more was needed to meet the needs of people with failing organs. Much more.

They looped in **Guojun Bu, Ph.D.** (NSCI ’10), the Jorge and Leslie Bacardi Associate Director of the Center for Regenerative Medicine in Florida and the Mary Lowell Leary Professor; and **Tushar Patel, M.B., Ch.B.** (I ’93, GI ’96), the James C. and Sarah K. Kennedy Dean of Research, Mayo Clinic in Florida and the Alfred D. and Audrey M. Petersen Professor of Cancer Research.



The Taner-Bu-Patel trio developed a white paper addressing the shortcomings of transplant medicine that became the springboard for the Transforming Transplant initiative across Mayo Clinic — a 2030 strategic priority.

“Transplant depends on organ donors, but most people waiting for an organ will never get one,” says Dr. Taner. “Additionally,



transplanted organs don't last long, and an increasing number of people have organ dysfunction and failure. Quite simply, the supply of transplantable organs hasn't grown at the same rate as the number of people with organ dysfunction and failure, which means we cannot solve patients' clinical needs with currently available methods in

transplant medicine. The solutions lie in doing things that haven't been done before.

"We recognized that many good things are happening at Mayo Clinic as well as outside of Mayo Clinic. We could create an ecosystem to bring together Mayo Clinic's clinical expertise with academia and industry to increase the value

The trio of Tushar Patel, M.B., Ch.B., C. Burcin Taner, M.D., and Guojun Bu, Ph.D., developed a white paper addressing the shortcomings of transplant medicine that led to the Transforming Transplant initiative — now a 2030 Mayo Clinic strategic priority.

1001k

The number of people in the
U.S. who are awaiting organ transplants

of what each does. We believe this is the impetus needed to create transformative solutions for patients who need organ transplants.”

In February, Mayo Clinic signed a research agreement to collaborate on organ transplant innovation with a partner in academia — Carnegie Mellon University of Pittsburgh, Pennsylvania.

Mayo Clinic transplant medicine and regenerative medicine have teamed with Carnegie Mellon’s biomedical engineering group to create solutions to the organ shortage. Carnegie Mellon has well-established strengths in tissue engineering, 3D biofabrication and bioprinting, computational organ modeling and design, extracellular matrix biology and engineering, biomaterials, stem cell engineering, cellular biomechanics, additive manufacturing, robotics and translational organ testing. Carnegie Mellon also is developing a future workforce that can innovate, commercialize and manufacture new organ designs and fabrication methods.

The two institutions have formed four work groups to accelerate the translation of biomedical discovery to clinical practice with a single goal — addressing patients’ clinical needs.

Focus areas include:

1. Organ and tissue biofabrication

Engineer custom tissues and organs with stem cells and scaffolding technologies, 3D printing and tissue engineering to eliminate the uncertainty of organ donation and long waits.

2. Restoration of previously unusable donated organs

Restore donated organs and optimize them for best outcomes and decreased discard rates.

3. Prevention and diagnosis of transplanted organ dysfunction

Prevent graft failure in patients who have received organ transplants, using remote organ monitoring with implantable sensors and therapeutic applications to ensure only one organ transplant per patient.

4. Prevention and diagnosis of organ dysfunction using artificial intelligence (AI)

Prevent organ failure and the need for a transplant through early diagnosis of organ dysfunction and cellular therapy interventions with the use of AI and other data.

“Mayo Clinic is the largest organ transplant provider in the U.S. and a preeminent academic medical center, and Carnegie Mellon is a leader in innovating and applying cutting-edge technologies to real-world problems,” says Dr. Taner. “Specifically, Carnegie Mellon is involved in research focused on creating a new generation of long-term replacement organs that are fully biological, artificial or a combination of both.”

Dr. Patel says the research and technological breakthroughs that result from collaborative teams working together will accelerate the progress in addressing challenges that have historically existed for transplantation.

Dr. Bu says that, in addition to accelerating the mission of transforming the practice of medicine through biotherapeutic technologies, these joint efforts will create the next-generation workforce that is ready to apply regenerative sciences and engineering to organ transplantation. “Undergraduate, graduate and postdoctoral trainees from both Mayo Clinic and Carnegie Mellon will be integrated in the clinic, laboratory and classroom to facilitate sharing knowledge and skill sets.”

PIs needed

For the Transforming Transplant initiative, Mayo Clinic is recruiting for a tissue engineer PI at Mayo Clinic on the Florida campus and a transplant immunologist PI on the Arizona campus. Interested alumni, contact schilbe.jennifer@mayo.edu.

“Our vision is to create the most innovative transplant programs in the world using our strengths and those of other institutions.”

– C. Burcin Taner, M.D.

WHAT THE FUTURE LOOKS LIKE

Mayo Clinic’s vision in this endeavor is bold:

- By 2035: Reverse the increasing imbalance between patients in need of organ transplants and available organs.
- By 2035: Significantly decrease the number of patients with organ failure/dysfunction.
- By 2040: Eliminate the organ waiting period for patients with organ failure.

When he looks in his crystal ball, Dr. Taner envisions a 2030 scenario like this one:

For less than a year, Jen, a 50-year-old patient, had worsening shortness of breath when she hiked. Although she’d always been active and healthy, Jen was diagnosed with pulmonary fibrosis. Physicians at several leading institutions told her she’d need a lung transplant within two years. Jen learned about Mayo Clinic’s innovative approach to patients with organ dysfunction

and failure, including using 3D printing and anatomic modeling technology to create patient-specific custom organs.

Jen went to Mayo Clinic in Florida to meet with a lung regeneration/transplant team. The team entered the results from her tests in a databank to compare them, using AI, to those from thousands of other patients and determine her disease progression. The data told Jen’s physicians that she’d need to replace her lungs within three months. The team took fat tissue from under Jen’s skin and extracted cells from the tissue to grow in a lab. Using 3D printing, the team made a new set of custom lungs to fit Jen. Her lab-grown cells were injected into the custom lungs, which were ready for her two months later.

At a date and time that was convenient for her, Jen returned to Mayo Clinic to have her old lungs removed and new ones transplanted. She stayed

in the hospital for a day and was monitored remotely after going home. Because the new lungs were made from her cells, Jen didn’t have to worry about rejecting them or taking immunosuppressant medications. Her physicians told her she’d be well enough for a hike with her family a few days after returning home — the first time she’d been able to do that for months.

“This future-state scenario is ambitious but, we think, realistic, and we’re putting in place the infrastructure and people at Mayo Clinic to make sure that’s the case,” says Dr. Taner. “The patient-centric Transforming Transplant initiative will use innovative technologies to address complex clinical problems. Only with strong partnerships — including benefactor support — will we create this ecosystem that will ultimately help patients. Our vision is to create the most innovative transplant programs in the world using our strengths and those of other institutions.” •



5k

donated organs are
discarded every year due
to poor quality



27k

organ transplants have
been performed at Mayo
Clinic Transplant Centers
in Arizona, Florida and
Minnesota since 1963



20

people in the U.S.
die every day waiting
for a transplant





Donald Northfelt, M.D., with Primrose Moone, a patient at Phoenix Indian Medical Center and Mayo Clinic Cancer Center.

Native American patient care

Wednesdays at PIMC

One Wednesday each month for the last 17 years, **Donald Northfelt, M.D.** (HEMO '02), Division of Hematology and Medical Oncology at Mayo Clinic in Arizona, has spent the day seeing cancer and hematologic disorder patients at Phoenix Indian Medical Center (PIMC), part of the Indian Health Service. His Mayo colleagues provide the same staffing on the other Wednesdays.

Tribal members cared for at PIMC come from the greater Phoenix area and throughout the U.S. The leading tribes represented in PIMC's patient population are the Navajo Nation of Arizona, New Mexico and Utah; Salt River Pima-Maricopa Indian Tribe; Pascua Yaqui Tribe; Gila River Indian Community; and Tohono O'odham Nation.

Dr. Northfelt describes his Wednesdays at PIMC as a fulfilling part of his practice. "It's become a second home, and I really feel that I can make a difference by being there.

"I grew up in northern Minnesota, where my community was surrounded by tribal lands. I was aware from a young age that my Native neighbors had very different life experiences than I had as a non-Native person. I moved to Arizona in 2002 and again was surrounded by Native neighbors who live very different lives than mine and have a very different history. The challenges that some Native people face in accessing necessary health care are shameful. In a small way, I can make efforts at PIMC to make health care more equitable."

*“You can stand on the front steps at Mayo’s Scottsdale campus and see reservations on the horizon. **If I can be involved in making things better for my Native neighbors, I want to be involved in that process.**”*

– Donald Northfelt, M.D.

PIMC is the largest hospital in the Indian Health Service and provides a range of medical services, including basic cancer surgical services and chemotherapy. PIMC contracts with Mayo Clinic for medical oncology and hematology consultative care. Patients who need radiation oncology, advanced surgical services, and advanced hematologic and medical oncology services are referred to community providers or Mayo Clinic.

Dr. Northfelt says he and his colleagues see 100 to 200 new patients each year at PIMC. The arrangement between Mayo Clinic in Arizona and PIMC reflects Mayo’s commitment to be part of the solutions to problems faced by historically underserved populations. And to advance the science.

“There’s an ongoing national crisis in recruiting diverse patients to clinical trials,” says Dr. Northfelt. “We know what happens to white people in clinical research, but we don’t have that information about other groups. When we identify PIMC patients who might benefit from a clinical trial at Mayo Clinic, we try to ensure they can participate. It’s an opportunity for Native patients to get access to cutting-edge innovations that may improve care of their cancer. I want all of my patients to have access to the best



treatment, especially those who come from backgrounds that historically haven’t had access to that care. There’s an element of justice involved.”

Dr. Northfelt says the historical mistrust of institutions and outsiders many Native American people feel extends to him and other Mayo Clinic providers. “When I meet a PIMC patient for the first time, I understand there may be a barrier of mistrust to overcome before the patient will feel like I’m on their side and trust me to offer the right kind of care. It helps tremendously when I’m teamed with a PIMC staff person from a Native background because it gives me an entrée into their world. I’m grateful for that collegiality to give me an aura of trust. Once trust is established, the



patients at PIMC are like all other patients — interested in following our recommendations, grateful and wanting their cancer to be treated. Taking care of these patients involves taking care of the whole family more than the typical patient I see at Mayo Clinic — an important distinction to be aware of.”

Dr. Northfelt and his colleagues who see patients at PIMC involve Mayo Clinic hematology/oncology fellows in an effort to broaden experience of trainees in caring for underrepresented patients. A new memorandum of understanding with PIMC will allow Mayo Clinic residents and medical students to also rotate there and share in the experience of caring for patients from different backgrounds.

Mayo Clinic in Arizona is working to establish relationships and collaborate with other tribal health centers. The pandemic has slowed those efforts but, as an example, Mayo has consulted on setting up physical therapy and radiology facilities at the new health center at the Salt River Pima-Maricopa Indian Community.

“You can stand on the front steps at Mayo’s Scottsdale campus and see reservations on the horizon,” says

Dr. Northfelt. “If I can be involved in making things better for my Native neighbors, I want to be involved in that process. I’m grateful to have been able to work at PIMC for 17 years and to have developed strong connections with patients and staff. It’s humbled me, made me more aware of gaps in resources and made me a better physician. It wouldn’t feel right to not spend those Wednesdays at PIMC.”



Phoenix Indian Medical Center

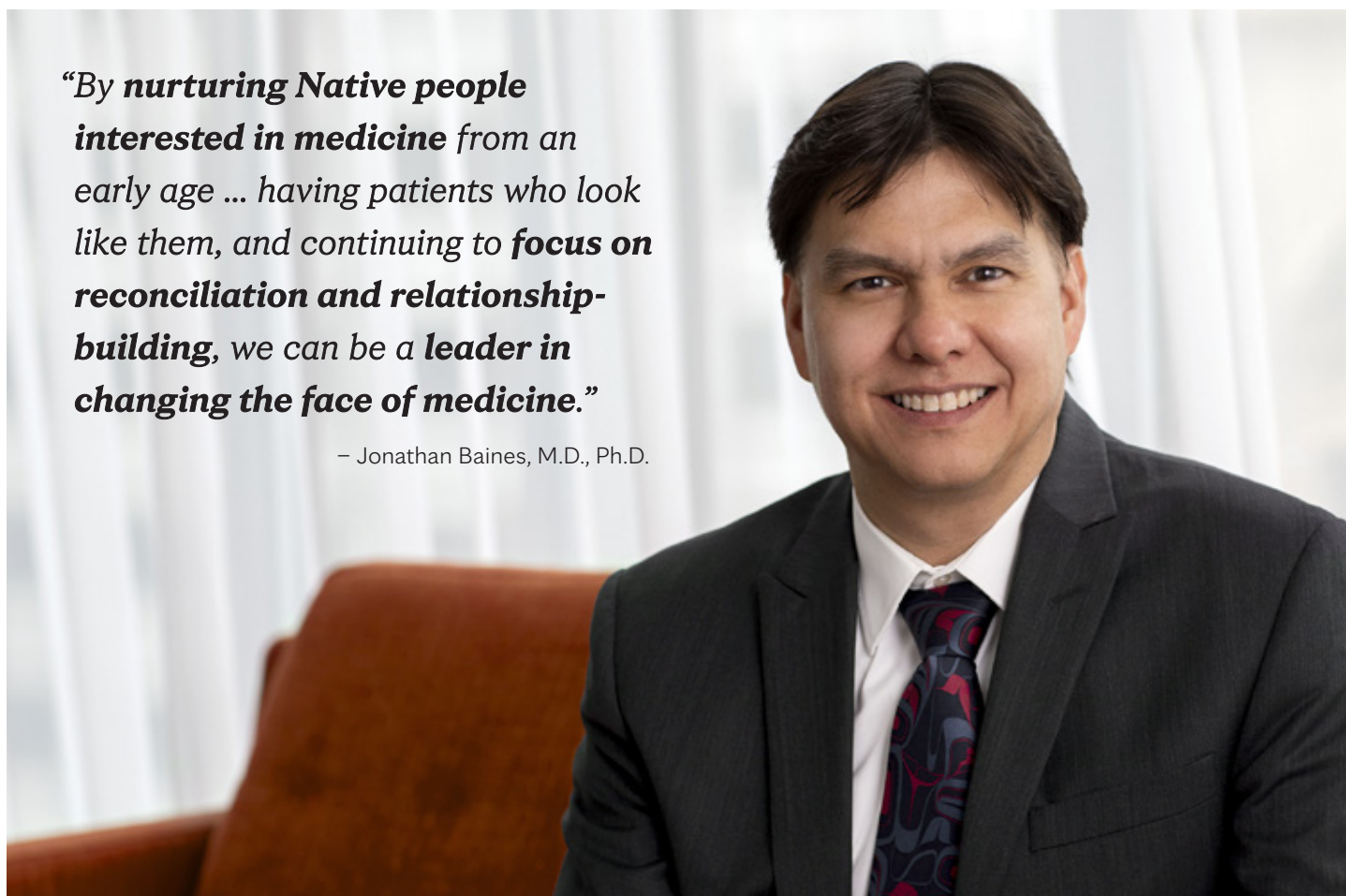
Photograph by Andrew Pielage



Donald Northfelt, M.D.; Cancer Center patient navigator Trudie Jackson; Primrose Moone, a patient; and Moone's son-in-law, Rida Son. Jackson works with Native American patients in the Cancer Center on the Arizona campus.

“By nurturing Native people interested in medicine from an early age ... having patients who look like them, and continuing to focus on reconciliation and relationship-building, we can be a leader in changing the face of medicine.”

– Jonathan Baines, M.D., Ph.D.



PRODUCING NATIVE PHYSICIANS — NUANCED AND COMPLEX

Jonathan Baines, M.D., Ph.D. (MDPH '04, TBIO '04, PRES '05, FM '09), Department of Family Medicine at Mayo Clinic in Rochester, was the first Native American student at Mayo Clinic to get a dual degree. His brother, **David Baines, M.D.** (MED '82), who recently retired from practice in Alaska, was the first Native American student to graduate from Mayo Clinic Alix School of Medicine. They are members of the Tlingit and Tsimshian Tribes of Alaska. But Dr. Baines knows full well how challenging it is for Native American people to get to this point.

Native Americans have a higher high school dropout rate than the general population. For some Minnesota tribes, the rate is more than 60%. That's a difficult environment from which to produce a physician. Once in college, Native American students also drop out at higher rates than the general population. Existing pathway programs focus on the undergraduate years, with programs sometimes competing for the same students. Fewer programs are available for high school students interested in premedicine and even fewer for young children. The pathway toward a career in medicine is more difficult for Native students, and

diversions from the pathway exist at every step from high school through residency.

“To succeed, we must provide learners with experiences to build resilience and support that are based in their own cultures and traditions,” says Dr. Baines, who directs Native American programming for the Mayo Clinic Office of Equity, Inclusion and Diversity, and a Native American Career Pairing adviser for Mayo Clinic Alix School of Medicine. He is a former board member of the Association of American Indian Physicians. “Because students can come from 574 federally recognized tribes, hundreds of state-recognized tribes and some unrecognized tribes, these cultural needs are nuanced and complex. Simply teaching learners how to take tests and the MCAT and how to shadow physicians and interview in the absence of cultural context is inadequate and not a best practice. Native students who complete medical education face unique challenges when they return to their Native communities or work elsewhere. It's important to have Mayo Clinic staff members involved in the Native American pathway programs who understand these cultural nuances and can nurture long-term — even lifelong — relationships.”

Mayo Clinic's Native American pathway programs include:

- **Books for children.** Native children don't see many Native physicians and, therefore, don't consider becoming a physician until later in their education, if at all — a loss of potential before it even begins. Dr. Baines is working with Mayo Clinic Press and Native authors and illustrators to create books about Native Americans becoming physicians and the habits needed for success.
- **Two-week summer program for high school students.** Native students tend to have lower GPAs than non-Native peers because they often are first-generation college students and need time to find their way. This program provides study skills, advice about avoiding pitfalls, a road map of the path to medical school, and discussion of internal and external barriers to success.
- **Four-week summer program for undergraduate students.** Native students tend to have lower MCAT scores than their white counterparts. This program offers MCAT preparation and one year of access to the online Princeton Review, personal mission statement preparation and mock interviews. Native premed students also lack mentors. Talks by visiting Native faculty from other institutions, peer mentoring by current Native residents and medical students, and time with Native elders are cornerstones of the program.
- **Four-hour workshops for medical students to prepare for residency.** Native medical students drop out more often and take longer to graduate on average than non-Native peers. These workshops focus on resilience in medical school, improving the residency application and transitioning from the fourth year of residency.

“We've also created a virtual Native community for Mayo learners and faculty to connect and support each other,” says Dr. Baines. “We'll add external Native physicians as adjunct faculty to make the community more robust and include more perspectives.”

In developing curriculum and recruiting Native medical students, residents, scientists and physicians, Mayo Clinic has worked with established programs at the University of Minnesota, Duluth (UMD) and the University of North Dakota INMED (Indians into Medicine) — both which have extensive histories of generating Native physicians.

“Our work builds on the work of others,” says Dr. Baines. **Judith Kaur, M.D.** (ONCL '94), Division of Hematology and Medical Oncology at Mayo Clinic in Florida and a 2018 Mayo Clinic Distinguished Alumni Award recipient, established Native American programs at Mayo Clinic almost 30 years ago. “We've built upon her national network. Our connections to UMD and the University of North Dakota came from that network.

“Becoming a physician is a long process, and Native history is complex. By nurturing Native people interested in medicine from an early age, developing relationships with them, providing them with opportunities, supporting them with strong cultural support, having patients who look like them, and continuing to focus on reconciliation and relationship-building, we can be a leader in changing the face of medicine.”

ARE YOU A NATIVE PHYSICIAN OR SCIENTIST?

Mayo Clinic would like to hear from Native physicians and scientists who are interested in participating in Mayo's education programs. Contact baines.jonathan@mayo.edu.

By the numbers

- Mayo Clinic in Rochester cared for 360 hospitalized Native American patients from 36 tribes in 2021.
- The majority of those patients came emergently.
- The leading diagnoses were cardiovascular disease, cancer, diabetes complications, neurologic conditions, liver failure, COVID-19 and mental health.
- The average length of stay in 2021 was 10.02 days — twice as long as the average patient length of stay due to health care inequities and social determinants of health.
- Mayo Clinic provides Native American Pathway Programs for students from elementary school through medical school to diversify the future health care workforce.
- Mayo Clinic Alix School of Medicine has nine Native American students — .5% of the total enrollment. Four have received the Marpiya te Najin Scholarship, a full scholarship for up to two Native medical students per year to attend Mayo Clinic Alix School of Medicine.
- Mayo Clinic School of Health Sciences has 15 Native American students — .81% of the total enrollment. Four or five students per year receive Amos Owen and Earnest Wabasha scholarships.
- First-year medical students have four hours of Indigenous health curriculum.
- Medical students in the Association of Native American Medical Students have developed an Indigenous Health selective available to all Mayo medical students. They and residents can rotate at tribal clinics in Menomonie, Wisconsin; White Earth, Minnesota; White River, Arizona; Fort McDowell, Arizona; and Phoenix Indian Medical Center.

CULTURAL SAFETY IS PRIORITY OF PATIENT EXPERIENCE AMBASSADOR

Valerie Guimaraes has a unique role at Mayo Clinic. A registered nurse, Guimaraes is a patient experience ambassador in the Office of Patient Experience. That's not the unique part. What sets Guimaraes' role apart from others is the patient population she serves — Native American patients who are hospitalized on the Rochester campus.

The position was created in 2018 as part of Mayo Clinic's continued focus on reconciliation and relationship-building with American Indian and Alaska Native communities. Guimaraes strives to provide cultural safety for this population that, historically, has been mistreated by institutions and who may be distrustful as a result.

In addition to helping to make Native American patients feel safe, Guimaraes works with Mayo Clinic staff to educate them about this population and resources available to them. As part of Mayo Clinic's pledge to eradicate racism, Guimaraes gives presentations to medical students in Rochester and Arizona. And she works with tribal governments and the Indian Health Service to assist with the care patients need when they return home.

Native American patients have the lowest medical adherence rates among all Mayo Clinic patient population groups. Those who are enrolled in tribes can get prescriptions from their tribal pharmacy at no charge, but the process can be slow and leave patients returning home without medications. Guimaraes helped to develop a process where Native American patients leaving Mayo Clinic can get their essential medications from a Mayo Clinic pharmacy at no charge at discharge, with the Indian Health Service reimbursing Mayo Clinic. A small but important step in improving medical adherence and helping to improve Native American health.

Guimaraes, who is Ho-Chunk and Dakota, particularly enjoys helping patients with their spiritual care needs and works closely with Mayo Clinic Spiritual Care staff to ensure they're familiar with resources available on the Rochester campus, including sacred plants and herbs, eagle feathers and a drum. Some of those items are used in smudging, a tradition that involves burning sweetgrass, sage and cedar to cleanse the air, clear minds, center thoughts and actions, and restore balance. Smudging is often led by an elder. Mayo Clinic dedicated the Art Owen

Guimaraes strives to **provide cultural safety** for this population that, historically, has been mistreated by institutions and who may be distrustful as a result.



Smudging Room at Mayo Clinic Hospital – Saint Marys Campus in 2021 for this purpose.

Guimaraes says it's necessary to understand the confluence of the contemporary Native American patient and the history of how this population has been treated. "You cannot provide high quality patient care without this understanding. Some patients or their family members haven't been away from their home reservation in decades and may be uncertain or frightened to be in an unfamiliar environment with so many non-Native people. Coming to Mayo Clinic can be a significant culture shock. Many Native American families don't have the resources needed to sustain them during loved ones' hospital stays in Rochester, much less when they return home and need ongoing care. We help as much as possible and are grateful for a Native American Family Fund in the Department of Development. Contrary to popular belief, the Indian Health Service

provides only basic health care for some — not all — Native American people and has limited resources."

Guimaraes wishes there were additional staff members assigned to work with Native American patients to give tribes and tribal members more information about what to expect at Mayo Clinic and resources once they're in Rochester, more benefactor support and in-depth follow-up care after discharge. And continued education of Mayo Clinic staff about Native American patients; their traditions, beliefs and history; and the Indian Health Service.

"We've accomplished quite a lot in the last several years, but there's much more work to do," she says. "I hope everyone takes time to learn about what Native American people have endured and continues to show compassion in delivering high quality care to them and ingenuity in devising ways to improve health care equity and outcomes." •



ON THE SHOULDERS OF GIANTS

Recognizing & nurturing potential

Caroline Clune, M.D. (PCIM '12), felt like her career had plateaued. Her background was in academic consultative medicine, but she'd had kids, made choices based on her family and moved to increasingly smaller institutions, including Mayo Clinic Health System in La Crosse, Wisconsin. She was mid-career and hadn't published. While Dr. Clune enjoyed her primary care practice, she didn't see a way back to her career intention.

In 2018, **Paul Mueller, M.D.** (GIM '95), became regional vice president of

Mayo Clinic in Southwest Wisconsin after being at Mayo Clinic in Rochester for 23 years, including serving as chair of the Division of General Internal Medicine. The two physicians met to discuss a quality leadership role Dr. Clune had recently accepted.

"I could tell immediately that Dr. Mueller was a unique physician, leader and person and that our region would benefit greatly from his presence," says Dr. Clune. "And he is intuitive. He could tell from looking at my CV that there was a divergence between the path I'd been on and where I was. Dr. Mueller

said, ‘You used to be in consultative academic centers. Did you like that?’ I acknowledged that I had but didn’t see an avenue back to that path in my current situation. Dr. Mueller took genuine interest in understanding me and the course of my career and used his experience and expertise to help me get on a different path.”

With Dr. Mueller’s assistance, Dr. Clune blazed trails in quality improvement in Southwest Wisconsin, moving it from last place to first place in Mayo Clinic Health System over several years. She says he never failed to mention her leadership role when he cited the quality gains. Dr. Clune secured a position in the Breast Diagnostic Clinic at Mayo Clinic in Rochester — a return to consultative medicine, and she now spearheads Mayo’s Center for Breast Care in Southwest Wisconsin. She’s now the Diversity, Equity and Inclusion chair in Southwest Wisconsin and, remarkably, has her name on eight papers published in 2021.

“I left academic medicine before getting involved in publishing,” says Dr. Clune. “Publishing is currency in medicine, and I needed someone to recognize that I didn’t know how to embark on that area of my career. Dr. Mueller helped me make connections in General Internal Medicine at Mayo Clinic in Rochester and get involved with COVID-19 initiatives, which led to my first publication. My progress in that area is more than I could have imagined.”

Dr. Mueller says he’s particularly enthusiastic about advancing the careers of women in medicine. “Women outnumber men in medical schools but are underrepresented in academic and leadership positions in medicine. I’m committed to eliminating barriers to and facilitating connections for the career advancement of learners and

colleagues. Dr. Clune is a remarkable physician and leader. I facilitated and supported some of her activities and made connections for her, which is my job as a leader. But, like any gifted colleague, she did all of the work to be successful. I look forward to witnessing her ongoing achievements.”

Dr. Clune says that Dr. Mueller was a true champion for her.

“Until I worked with him, I hadn’t met anyone who uses their position and privilege so intentionally to actively lift others up and open doors to advance others. He saw me. He cared. He saw potential. And he invested in me. His mentorship changed the course of my career in a way that has been life changing. There’s a joy in my work that had been missing. And it permeates all areas of my life. We go into medicine to find clinical joy. Now, I love going to work every day.” •

“His mentorship changed the course of my career in a way that has been life changing.”

– Caroline Clune, M.D.



Alumni spotlight

**Former fellow concludes term as president
of Royal College of Surgeons in Ireland**

This summer, **P. Ronan O’Connell, M.B., B.Ch.** (GI ’85, CRS ’86), concluded a two-year term as president of the Royal College of Surgeons in Ireland — the fifth Mayo Clinic alum to hold that position (page 51).

Dr. O’Connell recalls arriving in Rochester, Minnesota, in late June 1984. “It was hot and muggy — steamier than I’d expected,” he says. “And I hadn’t known about the mosquitoes.”

He came to Mayo Clinic to work as a research fellow in gastroenterology with **Keith Kelly, M.D.** (PHYS ’67, S ’68, deceased), former chair of surgery and a 2011 Mayo Clinic Distinguished Alumni Award recipient. Dr. O’Connell’s research focused on the physiology of ileoanal anastomosis (IPAA, or J-pouch) surgery. The operation was new, and Dr. Kelly and **Roger Dozois, M.D.** (S ’71), Mayo Clinic Emeriti Staff, were perfecting it.

In 1985, **Robert Beart, M.D.** (CRS ’78), asked Dr. O’Connell to stay at Mayo for a fellowship in colorectal surgery — the first fellow in the division who wasn’t from North America.

“My mentor at Trinity College, University of Dublin, knew Dr. Kelly, who’d been a visiting professor at Trinity,” says Dr. O’Connell. “There was a long tradition of Irish clinicians going to Mayo Clinic for training. Ireland is a small country, and to become an attending at a major hospital, most people had to go abroad to gain skills and bring them back to Ireland. There was something of a relay — handing the baton to the next Irish trainee at Mayo Clinic. I moved into a house in Homestead Village that **Peter Morrison, M.D.** (S ’84), had lived in.”





*“My fellowship in colorectal surgery at Mayo Clinic was the **foundation of my 30-year surgical career.**”*

— P. Ronan O’Connell, M.B., B.Ch.



Dr. O’Connell compares being at Mayo Clinic to working at a medical monastery. “Life in Rochester revolved around the clinic. It was such an efficient model, with patients seen by a physician in the discipline of their complaint, workups and consultations completed, and operations scheduled for the next day. I learned so much about service organization and delivery, quality assurance and techniques of surgery.”

When it came time to return to Ireland, Dr. O’Connell and his wife, Pauline, who worked as a NICU nurse at Saint Marys Hospital, shed some tears. “My fellowship in colorectal surgery at Mayo Clinic was the foundation of my 30-year surgical career, and I made great friendships and collegial relationships there.”

Dr. O’Connell brought the surgical and other skills he learned back to Ireland, where he says he was in good company. By 1990, 11 of the physicians he worked with at Mater Misericordiae University Hospital in Dublin — representing cardiology, surgery, anesthesiology, dermatology and pathology — had trained at Mayo Clinic.

“We shared a collective vision of the Mayo way, including how surgery should be delivered, and we tried to live up to the standards we had learned,” he says.

Dr. O’Connell established colorectal surgery as a discipline in general surgery at Mater and has had an illustrious career. He was the Newman Clinical Research Professor at University College Dublin, super-



vised 25 postgraduate students in achieving degrees, received three research prizes from the American Society of Colon and Rectal Surgeons, published 277 original papers and 28 book chapters, was editor of the British Journal of Surgery, served as president of the European Surgical Association and European Society of Coloproctology, and is an honorary fellow of the American Surgical Association and emeritus professor of surgery at University College Dublin.

He says being president of the Royal College of Surgeons in Ireland — serving as chancellor of the university and overseeing surgical training in the country and medical schools in Ireland, the Middle East and Malaysia — was a career highlight. Dr. O'Connell continues to teach

through the Royal College, edit books and journals, and pursue international volunteer work. Gardening and golf are pastimes. He and his wife have three grown children. Their daughter is a teacher, and the two sons have pursued medicine — one training in hepatobiliary transplant and one in internal medicine residency.

“Mayo Clinic gave me discipline and an attitude that patient care is primary, with research and education underlying it,” says Dr. O'Connell. “I have tried to impart that gift to my own children who have pursued medicine as well as to every trainee I've had the pleasure to work with. If it was good enough for Drs. Will and Charlie, it's good enough for me.” •

Mayo Clinic alumni who've served as president, Royal College of Surgeons in Ireland



Francis Duff, M.B., B.Ch.
(U '47), 1972–1974



Peter McLean, M.D.
(U '68), 1996–1998



Frank Keane, M.B., B.Ch.
(GI '79), 2008–2010



Eilis McGovern, M.B., B.Ch.
(CS '86), 2010–2012,
first woman president



P. Ronan O'Connell, M.B., B.Ch.
(GI '85, CRS '86),
2020–2022



Michelle Mielke, Ph.D.

Middle-aged women with cardiovascular risk factors may be at higher risk for cognitive decline than men

Women who have heart conditions such as coronary artery disease and cardiovascular risk factors such as diabetes and high cholesterol may be at greater risk for a decline in memory and thinking skills during midlife than men. Even though men more commonly have those conditions and risk factors.

Mayo Clinic studied 1,857 participants without dementia who were 50 to 69 at the onset of the research. Approximately 79% of participants had at least one cardiovascular risk factor or condition — 83% of men and 75% of women. For three years, participants were evaluated every 15 months on global cognition, including tests of memory, language, executive function and spatial skills.

The study found that:

- Most cardiovascular conditions were more strongly associated with cognitive function among women.
- The annual decline for global cognition associated with coronary artery disease was more than two times greater for women than men.
- Diabetes, high cholesterol and coronary artery disease were associated with greater language decline in women.
- Congestive heart failure was associated with greater language decline in men.

“It’s important to understand sex differences in the development of cognitive impairment,” says **Michelle Mielke, Ph.D.** (HSR ’11), Division of Epidemiology at Mayo Clinic in Rochester and senior author of the study. “Middle-aged adults, especially women with a history of heart disease, may represent critical subgroups for early monitoring. We need more research across the lifespan to examine potential mechanisms explaining sex differences in the relationship between cardiovascular factors and cognition, such as hormones, genetics, lifestyle and psychosocial factors.”

Study highlights need for prevention efforts to address cardiovascular disease in African Americans in Minnesota

African American adults in Minnesota, age 35–63, have almost twice the rate of death from cardiovascular disease compared to their white counterparts. This despite Minnesota having the lowest age-adjusted heart disease mortality in the U.S.

In the study group, the prevalence of common cardiovascular risk factors was hypertension 68%, hyperlipidemia 47%, diabetes 35% and cigarette smoking 25%. Cardiovascular disease was present in 18% of participants and increased by 30% or more with three or more risk factors.

According to the senior author of the study, **LaPrincess Brewer, M.D.** (CV '16), Division of Preventive Cardiology at Mayo Clinic in Rochester, the findings are significantly higher than found in previously documented studies. “The higher prevalence of risk factors and corresponding burden

of cardiovascular disease in African Americans in Minnesota is striking, but I am encouraged by the high level of trust in clinicians that this analysis revealed.”

Dr. Brewer references that 83% of participants reported trust in their health care provider, and 99% agreed their actions could affect their health and that cardiovascular disease prevention was important. “We’ll continue to use these findings to work to improve cardiovascular disease risk factors in this population in community and clinical settings, including our community-based participatory research through the FAITH (Fostering African American Improvement in Total Health) Program.”



LaPrincess Brewer, M.D.

Researchers discover biomarker for predicting immunotherapy response in mesothelioma

Mayo Clinic researchers have discovered a genomic signature to predict which patients with mesothelioma may benefit from immunotherapy.

One of the leading biomarkers for determining which patients get immunotherapy for various cancers is related to the number of gene mutations in a patient’s cancer tumor. This approach assumes that a high number of mutations is more likely to be recognized as abnormal by the body’s immune system. But many patients with mesothelioma also benefit from immunotherapy despite their tumors showing a low number of mutations. This discrepancy led researchers to look for other explanations about what activates or prevents a response to immunotherapy in patients with mesothelioma, according to **Aaron Mansfield, M.D.** (I '09, CI '11, HEMO '13), co-director of Mayo Clinic Precision Cancer Therapeutics,

Mayo Clinic in Rochester, who led the study.

Dr. Mansfield and his team, in collaboration with Netherlands Cancer Institute researchers, investigated complex mutations in large fragments of DNA from 44 patients with mesothelioma before they had immunotherapy. Using an extensive sequencing method, the researchers analyzed the chromosomal strands to see if they had been rearranged, broken apart or joined together.

“Instead of just analyzing a single point mutation, we can tell when the arms of the DNA are switching around,” says Dr. Mansfield. “Those genetic mutations are known as chromosomal rearrangements.”

By itself, a chromosomal rearrangement isn’t a perfect



Aaron Mansfield, M.D.

predictor of response to immunotherapy. What also matters is whether the tumor cells present the abnormal proteins that result from these rearrangements to the immune system. Some tumors stop presenting protein fragments to hide from the immune system and not be attacked.

“To be recognized by the immune system, tumor cells need to present the mutant proteins to alert the immune system to the tumor so the immune system attacks and eliminates it,” says Dr. Mansfield. “It’s like turning on a signal. A mutation could otherwise escape recognition from the immune system’s surveillance mechanisms.”

The researchers discovered that the combination of chromosomal rearrangements and ability of tumor cells to present mutant proteins was a telltale sign to indicate which patients were most likely to benefit from immunotherapy.

Drug shows promise for GI cancers

Tanios Bekaii-Saab, M.D. (HEMO '16), Division of Hematology and Medical Oncology at Mayo Clinic in Arizona, has conducted research on the drug adagrasib, which has demonstrated promising clinical activity in patients with gastrointestinal cancers that have KRAS G12C mutations, including pancreatic, biliary tract and other upper GI cancers.



Tanios Bekaii-Saab, M.D.

“The prognosis for patients whose cancer harbors a KRAS gene mutation is particularly poor, and researchers’ attempts to target KRAS G12C, which represents less than

5% of all KRAS mutations in this group of cancers, have failed until only recently,” says Dr. Bekaii-Saab. “Our data showed that adagrasib not only effectively inhibits cancers with a KRAS G12C mutation but also showed promising clinical activity in patients with gastrointestinal cancers.”

He says the GI cancers for all patients treated in this phase II trial cohort were controlled, with almost half showing evidence of significant and durable tumor shrinkage.

“These results were very impressive in treating a group of diseases that tend to have a particularly poor outcome,” says Dr. Bekaii-Saab. “We were pleasantly surprised by these findings, given that our previous experience with another similar agent was disappointing in this group of patients.”

Patients with alcohol-associated cirrhosis have worse outcomes in critical illness recovery than other cirrhosis patients

Patients with alcohol-associated cirrhosis have worse outcomes after ICU discharge compared to patients with cirrhosis linked to other causes, according to Mayo Clinic research.

In a retrospective study of 1,174 patients, those with alcohol-associated cirrhosis had a significantly higher post-ICU in-hospital death rate — 10% versus 6.5% — and higher mortality at the 30-day benchmark after ICU discharge — 18.7% versus 11.2% — than patients with cirrhosis attributed to other causes.

“Clinical outcomes of patients with alcohol-associated cirrhosis (ALC) have been reported in previous studies, with conflicting results,” says **Douglas Simonetto, M.D.** (I1 '10, I '12, GI '15, HEPT '16, CTSA '24), Division of Gastroenterology and Hepatology at Mayo Clinic in Rochester and the study’s senior author. “Our study demonstrates that although there is no significant difference in ICU mortality in patients with ALC compared to other causes, there was a significant difference in mortality for patients who survive their ICU stay up to 30 days later.”

Previous studies have attributed a higher prevalence of infection as the reason for increased mortality in patients with ALC compared to patients without ALC. “In our study, the infection rates were similar between the two groups,” says Dr. Simonetto. “But when infection was present, it was associated with higher mortality in ALC.”

The mean age of patients in the study was 59, and 60% were male. Among ALC patients, 69.2% had cirrhosis caused by alcohol use alone and 30.8% had cirrhosis due to alcohol plus a cause such as viral hepatitis C. About half of the patients with ALC continued to drink until the ICU admission; 36.7% quit six months or longer before admission.

“Surprisingly, there was no significant difference in survival for patients who abstained from alcohol six months or more before ICU admission and those who did not,” says **Chansong Choi, M.D.** (I '22), a resident in the Department of Internal Medicine at Mayo Clinic in Rochester and the study’s lead author. “This may reflect too short a period of abstinence; other studies



Douglas Simonetto, M.D.



Chansong Choi, M.D.

have suggested that at least one to one-and-a-half years of abstinence might be needed to make a significant difference in survival outcomes in patients with ALC.”

Early diagnosis of sepsis is critical in patients with cirrhosis who are admitted to the ICU. Quick Sequential (Sepsis-Related) Organ Failure Assessment (qSOFA) has been proposed as a simple tool for early detection of sepsis.

“Our study finds that qSOFA is a poor prognosticator of sepsis and in-hospital mortality among patients with cirrhosis,” says Dr. Choi. “We need better bedside tools to predict infection and sepsis in these patient groups so we can implement the appropriate therapeutic measures.”



Collaborative Research Building is gifted to Mayo Clinic

The Collaborative Research Building on Mayo Clinic's Scottsdale, Arizona, campus, is now fully owned by Mayo Clinic thanks to a gift from benefactors Thomas R. and Ruth Ann Hornaday of Paradise Valley, Arizona. They donated the 110,000-square-foot biomedical research facility, which opened in 2005. Hornaday Development oversaw the building's planning and construction and owned the building, leasing it to Mayo Clinic. The gift is valued at \$64.4 million.

From the Collaborative Research Building, Mayo Clinic researchers, physicians and other investigators lead the scientific discovery of the mechanisms of human disease and the latest procedures, diagnostics, innovative surgeries and new treatment options to address unmet patient needs.

The Collaborative Research Building:

- Houses laboratory-based research activity
- Provides space for research in areas including cancer, immunology, neuroscience, allergy, cardiology, endocrinology, transplantation, regenerative medicine and biomedical engineering
- Is home to the Arizona Experiential Learning Procedural Skills Lab, Mayo Clinic Graduate School of Biomedical Sciences and Mayo Clinic Alix School of Medicine — Arizona Campus. Research students seeking a Ph.D. or M.D.-Ph.D. are involved in the research labs in the building

“As a surgical oncologist, I share the Hornadays’ passion for advancing new treatments and cures for cancer. We need the answers today to make a difference for our patients who cannot wait,” says **Richard Gray, M.D.** (S ’00), CEO of Mayo Clinic in Arizona. “Providing the right environment and resources for our physicians and scientists to work collaboratively to bring forward new discoveries is central to success. This gift to Mayo Clinic will house top researchers from Mayo and synergistic partners, enabling work in cancer research and other specialty areas for years to come.”

Mayo Clinic awards named professorships

Charles Adler, M.D., Ph.D. (N ’91)

The Wayne and Kathryn Preisel Professor of Neuroscience Research
Division of Movement Disorders
Department of Neurology
Mayo Clinic in Arizona

Nadia Laack, M.D. (RADO ’06)

Hitachi Professor of Radiation Oncology Research
Chair, Department of Radiation Oncology
Mayo Clinic in Rochester

Stephen Ansell, M.D., Ph.D. (I ’96, HEMO ’99)

Dorothea W. and Grant L. Sundquist Professor of Hematologic Malignancies Research
Division of Hematology
Department of Internal Medicine
Mayo Clinic in Rochester

Michael Link, M.D. (MED ’90, NS ’96)

Charles B. and Ann L. Johnson Professor of Neurosurgery II
Department of Neurologic Surgery
Department of Otorhinolaryngology – Head and Neck Surgery
Mayo Clinic in Rochester

Paul Brown, M.D. (I1 ’96, RADO ’00)

Wilmeth Professor of Radiation Oncology Honoring Robert L. Foote, M.D.
Department of Radiation Oncology
Mayo Clinic in Rochester

Zhenkun Lou, Ph.D. (PHAR ’01)

Swanson/Schmucker Endowed Professor
Chair, Division of Oncology Research
Department of Oncology
Division of Clinical Pharmacology
Department of Molecular Pharmacology and Experimental Therapeutics
Mayo Clinic in Rochester

Mohamad Bydon, M.D. (NS ’15)

Charles B. and Ann L. Johnson Professor of Neurosurgery I
Department of Neurologic Surgery
Mayo Clinic in Rochester

James Meschia, M.D. (N ’97)

Frances Bartlett Kinne, Ph.D. Professor at Mayo Clinic in Florida
Department of Neurology
Department of Neurologic Surgery
Mayo Clinic in Florida

John Cheville, M.D. (SGPA ’95)

William B. Zeller, M.D., Professor of Pathology
Division of Anatomic Pathology
Department of Laboratory Medicine and Pathology
Mayo Clinic in Rochester

Michael Silber, M.B., Ch.B. (N ’92)

Elliott and Marlys Badzin Neuro-Degenerative Sleep Disorder Professor
Dean, Mayo Clinic School of Health Sciences
Division of Sleep Neurology
Department of Neurology
Mayo Clinic in Rochester

Allan Jaffe, M.D. (CV ’99)

Wayne and Kathryn Preisel Professor of Cardiovascular Disease Research
Division of Ischemic Heart Disease and Critical Care
Department of Cardiovascular Medicine
Department of Laboratory Medicine and Pathology
Mayo Clinic in Rochester

Mayo Clinic School of Graduate Medical Education gives awards

Each year, Mayo Clinic School of Graduate Medical Education recognizes excellence among residents and fellows. This year's awards include the following.

MAYO BROTHERS DISTINGUISHED FELLOWSHIP AWARD

Recognizes the qualities associated with William J. Mayo, M.D., and Charles H. Mayo, M.D. Each year since 1997, Mayo Clinic School of Graduate Medical Education (MCSGME) has selected six trainees from Arizona, Florida and Rochester/Midwest to receive the award based on outstanding clinical performance, humanitarianism and scholarly activity.

- **Jithma Abeykoon, M.D.** (I '18, HEMO '21), Medicine & Pediatrics, Hematology/Oncology, Mayo Clinic in Rochester
- **Sean Cantwell, M.D.** (MED '17, PLSI '23), Surgery & Surgical Specialties, Plastic Surgery Integrated, Mayo Clinic in Rochester
- **Shannon Fortin Ensign, M.D., Ph.D.** (HEMO '22), Hematology/Oncology, Mayo Clinic in Arizona
- **Elizabeth Jeans, M.D.** (RADO '22), Medical & Laboratory Specialties, Radiation Oncology, Mayo Clinic in Rochester
- **Adam Kase, M.D.** (I '19, HEMO '22), Hematology/Oncology, Mayo Clinic in Florida
- **Himesh Zaver, M.D.** (I '22), Internal Medicine, Mayo Clinic in Florida

BARBARA BUSH DISTINGUISHED FELLOWSHIP AWARD

Recognizes outstanding clinical performance and scholarly activity with a particular emphasis on humanitarianism. It is named to honor the contributions of Barbara Bush, former U.S. first lady and former Mayo Clinic trustee.

- **Tolulope (Tolu) Kehinde, M.D.** (I '20, ANES '23), Surgery & Surgical Specialties, Anesthesiology, Mayo Clinic in Rochester

HEALTH CARE DISPARITIES AWARD

Recognizes an outstanding health care disparities project.

- **Nirosha Perera, M.D.** (I '23), Internal Medicine, Mayo Clinic in Rochester: "Nationwide Trends in Female Representation in Oncology Clinical Trials: A Cross-sectional Study of ClinicalTrials.gov from 2008–2020"

DIVERSITY AWARD

Recognizes individuals or projects that have significantly contributed to greater MCSGME diversity and support recruitment or retention of diverse learners.

- **Peace Eneh, M.D.** (I '19, ANES '22), Anesthesiology, Mayo Clinic in Rochester: "Melanin at Mayo: Underrepresented in Medicine"
- **Eseosa Ighodaro, M.D., Ph.D.** (I '20, N '23), Neurology, Mayo Clinic in Rochester: multiple projects
- **Nycole Joseph, M.D.** (I '18, N '21, CBVD '22), Vascular Neurology, Mayo Clinic in Florida: "Melanin at Mayo: Underrepresented in Medicine"

PATIENT SAFETY AWARD

Recognizes an outstanding patient safety project.

- **Michael Skolka, M.D.** (N '22), Neurology, Mayo Clinic in Rochester: "Neurology Collaborative Fall Prevention Quality Improvement Project"

QUALITY IMPROVEMENT AWARD

Recognizes an outstanding clinical or nonclinical quality improvement project.

- **Stephanie Mavis, M.D.** (PD '17, PDNE '22), Neonatal-Perinatal Medicine, Mayo Clinic in Rochester: "Reducing Necrotizing Enterocolitis (NEC) in the Neonatal Intensive Care Unit"
- **Himesh Zaver, M.D.** (I '22), Internal Medicine, Mayo Clinic in Florida: "Reduction in Healthcare Facility-onset Clostridioides Difficile Infection: A Quality Improvement Initiative"

WELL-BEING AWARD

Recognizes individuals or projects that have significantly contributed to greater MCSGME or overall clinical care team well-being.

- **Anna Kornafeld, M.D.** (I '23), Internal Medicine, Mayo Clinic in Florida: "Welcome to Jacksonville Guide: By Residents, For Residents"
- **Colt Williams, M.D.** (HEMO '23), Hematology/Oncology, Mayo Clinic in Rochester: "Stress Management and Resiliency Training for Oncology Fellows"

Babies born at rural hospitals more likely to experience birth-related injury

Babies born at rural hospitals are more likely to experience a birth-related injury than those born at urban hospitals, according to research led by Mayo Clinic.

The study's senior author, **Aaron Spaulding, Ph.D.** (HCDR '17), Division of Health Care Delivery Research at Mayo Clinic in Florida, and his colleagues used Florida hospitals' 2013–2018 inpatient data. The most notable finding is that no matter a patient's race, a rural location was associated with increased odds of birth trauma

compared to an urban location. The greatest birth trauma risk was among rural Hispanic or Latino babies.

Dr. Spaulding says it's important to understand outcomes in the context of care settings and processes so that care meets the needs of patients and the overall population. Dr. Spaulding has led several multi-institutional collaborations investigating differences in hospital quality outcomes among geographic settings.

"Our work in this area seeks to understand how communities in

which hospitals reside influence hospital outcomes and vice versa," says Dr. Spaulding. "Many policies use a one-size-fits-all approach that may be inappropriate and may punish or reward hospitals based on factors they have little control over."

He and his team continue to work on topics that assess disparities, geographic location and care outcomes to understand better the effect of community characteristics on health care outcomes. The team is evaluating the presence of Magnet-designated hospitals and differences in associated health care outcomes between Magnet and non-Magnet-designated hospitals.

"We hope that our research can clarify areas of needed policy and practice intervention," says Dr. Spaulding. "Improved measurement of disparities and comparisons between communities and geographic locations will provide us with better tools to fight unequal access to quality care."



Aaron Spaulding, Ph.D.



A possible solution to the birth-related injury disparity in rural health care is teleneonatology, which may bridge an essential gap and lead to better outcomes for babies born in rural settings or even urban hospitals with no access to neonatologists (page 16).

Obituaries

Arnold Anderson Jr., M.D. (PD '50), died May 8, 2017.

James Bassingthwaite, M.D. (I '61), died Feb. 2, 2022.

Allen Bergh, M.D. (RD '69), died April 14, 2022.

Warren Blume, M.D. (N '69, PDN '72), died Sept. 13, 2021.

John Bossard, M.D. (NS '58), died Sept. 9, 2021.

Mahlon Burbank, M.D. (I '61), died July 23, 2021.

Robert Dunlap, M.D. (S '53), died July 10, 2012.

Jeffrey Eckardt, M.D. (ORON '80), died Nov. 13, 2020.

Gerald Ellison, M.D. (RD '72), died Jan. 7, 2022.

Gerald Gilchrist, M.D. (PD '71), died April 10, 2022.

Herbert Gladen, M.D. (MED '76, S '82), died March 7, 2022.

Philip Greipp, M.D. (HEM '75), died Feb. 11, 2020.

Robert Johnson, M.D. (NS '70), died March 15, 2021.

William Lahners, M.D. (TY '97), died Dec. 10, 2021.

Edward Lufkin, M.D. (ENDO '74), died Feb. 10, 2022.

John Malloy, M.D. (OBG '63), died Feb. 15, 2022.

John Manesis, M.D. (RD '74), died Oct. 20, 2021.

Joe Miller Jr., M.D. (S '72), died Dec. 23, 2021.

Kevin Moder, M.D. (I '90, RHEU '93), died April 1, 2022.

Raymond Newnum, M.D. (I '58), died Sept. 25, 2021.

Gyman Okeson, M.D. (THD '70), died Dec. 28, 2021.

Herbert Reiman Jr., M.D. (PATH '77), died March 10, 2022.

Bernard Rice, M.D. (I '60), died June 15, 2021.

Don Santschi, M.D. (I '63), died Dec. 22, 2021.

John Schneider, M.D. (U '56), died April 11, 2022.

Coolidge Shiro Wakai, M.D. (I '57), died Aug. 31, 2021.

Jeff Sloan, Ph.D. (HSR '95), died May 1, 2022.

John Spittell Jr., M.D. (I '55), died April 10, 2022.

Paul Vandersteen, M.D. (DERM '70), died May 12, 2022.

Amy Visser, M.D. (N '14, NNM '16), died Jan. 4, 2020.

Robert Weyand, M.D. (NS '51), died April 12, 2022.

Kenneth Williamson, M.D. (PATH '70), died March 14, 2020.

MAYO CLINIC ALUMNI ASSOCIATION OFFICERS

PRESIDENT

Carl Backer, M.D.

Winnetka, Illinois

PRESIDENT ELECT

Theresa Emory, M.D.

Williamsburg, Virginia

VICE PRESIDENT

Burkhard Wipperman, M.D.

Hildesheim, Germany

SECRETARY-TREASURER

M. Molly McMahon, M.D.

Rochester, Minnesota

PAST PRESIDENT

Eric Edell, M.D.

Rochester, Minnesota

DIRECTOR, ALUMNI CENTER

Judith D. Anderson

Rochester, Minnesota

EXECUTIVE COMMITTEE

Gerardo Colon-Otero, M.D.

Jacksonville, Florida

Ex Officio

Elizabeth Cozine, M.D.

Rochester, Minnesota

Dawn Marie Davis, M.D.

Rochester, Minnesota

Ex Officio Medical Director

Alumni Center

Cody Fisher

Rochester, Minnesota

MCGSBS representative

Eddie Greene, M.D.

Rochester, Minnesota

Bruce Horazdovsky, Ph.D.

Rochester, Minnesota

Mitchell Humphreys, M.D.

Scottsdale, Arizona

Hannah Lodin

Scottsdale, Arizona

MCASOM representative

Olayemi (Yemi) Sokumbi, M.D.

Jacksonville, Florida

Erik St. Louis, M.D.

Rochester, Minnesota

Krishna Vyas, M.D., Ph.D.

Rochester, Minnesota

MCR-MCSGME representative

BOARD OF DIRECTORS

Amado Baez, M.D.

Augusta, Georgia

Robert Bratton, M.D.

Lexington, Kentucky

Melanie Brown, M.D.

Baltimore, Maryland

Aaron Bush, M.D.

Jacksonville, Florida

MCF-MCSGME

representative

Daniel Chan, M.D.

Mililani, Hawaii

M. Sertac Cicek, M.D.

Istanbul, Turkey

Sean Dinneen, M.D.

Galway, Ireland

Erin Gillaspie, M.D.

Nashville, Tennessee

Kyle Kircher, M.D.

Stillwater, Minnesota

Brady Laughlin, M.D.

Phoenix, Arizona

MCA-MCGSME representative

John Loftus, M.D.

Napa, California

Olufunso Odunukan, M.B.B.S.

Las Vegas, Nevada

Michael Rock, M.D.

Rochester, Minnesota

David Skillrud, M.D.

Bloomington, Illinois

Thomas Smith, M.D.

Littleton, Colorado

Daniel Townsend, M.D.

Boston, Massachusetts

Kajetan von Eckardstein, M.D.

Kaiserslautern, Germany

Enrique Wolpert, M.D.

Mexico City, Mexico

Elaine Yacyshyn, M.D.

Edmonton, Alberta, Canada

Patricia Yugueros, M.D.

Atlanta, Georgia

ALUMNI CENTER

507-284-2317

mayoalumni@mayo.edu

alumniassociation.mayo.edu

ALUMNI MEETINGS & RECEPTIONS

alumniassociation.mayo.edu/events

ALUMNI PHILANTHROPY

Doctors Mayo Society

800-297-1185 | 507-284-9101

doctorsmayosociety@mayo.edu

EDUCATION VERIFICATION

Mayo Clinic College of Medicine

college.mayo.edu/academics/residencies-and-fellowships/contact-and-verifications

PATIENT TRANSPORTATION

Mayo Clinic MedAir

Mayo One

800-237-6822

mayomedicaltransport.com

PHYSICIAN REFERRAL

Arizona 866-629-6362

Florida 800-634-1417

Rochester 800-533-1564

mayoclinic.org/medicalprofs

REFER A FRIEND

alumniassociation.mayo.edu/resources/refer-a-friend

STAY IN TOUCH WITH THE ALUMNI ASSOCIATION

Make sure we have your email address.

If you've registered your profile on the Alumni Association website, you can check and update your contact information:

alumniassociation.mayo.edu

If you don't yet have an online profile, email

mayoalumni@mayo.edu or call 507-284-2317

to update your contact information.

CORRESPONDENCE AND ADDRESS CHANGES

Mayo Clinic Alumni Center

Siebens 5-33, Mayo Clinic

200 First Street SW

Rochester, MN 55905

mayoalumni@mayo.edu

507-284-2317

Fax 507-538-7442

ABOUT THE MAGAZINE

Mayo Clinic Alumni magazine is published quarterly and mailed free of charge to physicians, scientists and medical educators who studied and/or trained at Mayo Clinic, and to Mayo consulting staff.

The magazine reports on Mayo Clinic alumni, staff and students and informs readers about newsworthy activities at Mayo Clinic.

EXECUTIVE EDITOR

Judith D. Anderson

MANAGING EDITOR

Melissa Abrams Caulfield

FIND MAYO CLINIC



mayoclinic.org

©2022 Mayo Foundation for Medical Education and Research.

All rights reserved. MAYO, MAYO CLINIC and the triple shield Mayo logo are trademarks and service marks of MFMER.

The Gift of Life wall at Mayo Clinic Hospital, Saint Marys Campus honors people who give of themselves to serve others through selfless acts of donation. Organ, blood, eye and tissue donations provide new life to their recipients. Anatomical donations advance the training of highly skilled, compassionate health care providers.

fred Building
suff Tower

HONORING THE Gift of Life

IN THE MAYO CLINIC MISSION OF INSPIRING HOPE AND HEALING TO OUR PATIENTS, WE HONOR PEOPLE WHO GIVE OF THEMSELVES TO SERVE OTHERS THROUGH SELFLESS ACTS OF DONATION.

ORGAN, BLOOD, EYE AND TISSUE DONATIONS PROVIDE NEW LIFE TO THEIR RECIPIENTS. ANATOMICAL DONATIONS ADVANCE THE TRAINING OF HIGHLY SKILLED, COMPASSIONATE HEALTH CARE PROFESSIONALS.

WITH THE GENEROUS SPIRIT OF THESE DONORS,
EVERY LIFE HAS A NEW BEGINNING.

Sept. 15–17

Register now

2022 Mayo Clinic Alumni Association International Meeting

Following the Mayo brothers' tradition, this meeting combines focused learning on current topics in medicine and science with leisure time among colleagues in settings that foster innovative thinking.

Lisbon, Portugal, a city that has seamlessly blended heritage, modernism and progressive thinking, is considered one of the most vibrant and exciting destinations in Europe. Join us and connect with alumni from all over the world while enjoying a wide-ranging program that leaves plenty of free time to explore all that Lisbon offers.

Conference headquarters
Grande Real Villa Italia Hotel & Spa
Rua Frei Nicolau de Oliveira, 100
2750-319 Cascais-Portugal
[alumniassociation.mayo.edu/
2022-international-program-in-lisbon](http://alumniassociation.mayo.edu/2022-international-program-in-lisbon)

