

## EXPERIENCE

*"these experiences have made me more grateful" "an extremely dynamic place in which to learn"*  
*"I owe my career to Mayo and to my physicians there" "even the other patients and visitors we met*  
*along the way, you couldn't find anywhere else" "I can't imagine having better care anywhere*  
*else in the world" "we felt entirely confident in Mayo" "even the*  
*smallest kindness makes a difference in patients' experiences here"*

Mayo Clinic will provide the best care to every patient every day through integrated clinical practice, research and education.

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Thanks to our patients, students and Mayo Clinic staff who appear in this annual report for contributing their time and stories.

*One of the best things about working at Mayo Clinic is hearing patients talk about their experiences here. Each patient or family member's story is unique, but they almost always have one thing in common - a focus on personal interaction. Patients put their trust in our medical expertise, but what touches them is the care and kindness that come with diagnosis and treatment at Mayo.*

*At Mayo Clinic we are committed to providing the most up-to-date medical care, research and education - all in service to our patients. Our goal is that the experience of all of our patients should begin and end with the knowledge that their needs come first at Mayo Clinic.*

*The best way to share the unparalleled Mayo Clinic experience is through the stories of all who are a part of Mayo. In our annual report you will find stories of people who have benefited from Mayo's care and education. Some are survivor stories. Some are stories of hope. Each story inspires us to continue to provide the best care to every patient, every day.*



*Denis A. Cortese*

Denis A. Cortese, M.D.  
President and CEO  
Mayo Clinic

"The dedicated, expert staff,  
the technology, even the  
other patients and visitors  
we met along the way, you  
couldn't find anywhere else."





**KOBE GIESEN**

Fargo, North Dakota

These days, on rare occasions, active two-and-a-half year-old Kobe Giesen will quietly snuggle in bed with his parents, Shane and Karmen. “In those moments, I gently put my hand over his heart just to feel it beat,” says Karmen. “The gift of this heart is still overwhelming.” That word ‘overwhelming’ is uniquely appropriate because the heart beating in their young child is his third.

The Giesens were already seasoned parents when Kobe was born on Sept. 27, 2006. They have two daughters (Taylor, 8, and Brynn, 5), and were well acquainted with illnesses that afflict infants. But as Kobe’s appetite began to diminish when he was 3 months old, the Giesens had a nagging feeling that something was wrong.

The change in eating prompted a visit to their son’s physician in Fargo, N.D. An initial electrocardiogram (EKG) and chest X-ray suggested a heart murmur, and something more serious. A local pediatric cardiologist performed an echocardiogram and delivered the shocking news that their son was in heart failure. As the Giesens were still reeling from the news, Kobe was hospitalized.

On Jan. 5, 2007, the Giesens were told that Kobe had dilated cardiomyopathy, a disease in which the heart muscle weakens and the heart chambers enlarge (dilate).

“On that first day in the hospital, we were told that Kobe might need a heart transplant ... someday,” recalls Shane.

**‘SOMEDAY’ COMES SOON** Kobe spent 22 days in the intensive care unit in a Fargo hospital — many on a ventilator. Complications arose, including pneumonia and a blood clot. On Jan. 26, Kobe went home on medications and hopes for continuing improvement.

Over the next few months, life returned to a new normal. By age 1, Kobe started crawling again,

then walking and playing. But always looming in the background was the fact that Kobe’s heart was double the normal size, and he was weak. In April 2008, he was treated for pneumonia. Following this setback, Kobe seemed unable to regain his strength.

By early June, Kobe was in severe heart failure and unable to walk. When his ejection fraction (a measurement of how much blood is pumped out of a filled ventricle) became dangerously low, physicians in Fargo arranged for him to be airlifted to Mayo Clinic’s campus in Rochester, Minn. Kobe, accompanied by his mother, arrived at Saint Marys Hospital in Rochester on June 3. Shane made the five-hour trip by car.

By early the next day, Kobe’s blood pressure had plummeted, and he was listed for a heart transplant. That afternoon, as his condition rapidly worsened, he was taken to an operating room and put on a heart-lung machine. Throughout the day, concerned surgeons, anesthesiologists, pediatricians, nurses, respiratory therapists, and other caregivers streamed in and out of Kobe’s room on the cardiac intensive care unit.

One of Kobe’s nurses, Clint, helped prepare the Giesens for what Kobe would experience. “Clint brought us a brochure that described the heart-lung machine and explained what Kobe would look like hooked to this device,” recalls Karmen. “Another nurse, Missy, who also has a son with dilated cardiomyopathy, visited with us on her breaks. These are just two of the dozens of

nurses, physical and occupational therapists and Child Life specialists who would become important to Kobe. Our daughters could name about 15 nurses alone who cared for their brother.”

The pivotal person among this large, multidisciplinary team was Joseph Dearani, M.D., who would become Kobe’s transplant surgeon.

“At first, it was scary being here at Mayo Clinic,” Shane says. “It was an entirely new place to us. We asked Dr. Dearani if we’d come to the right place. He said, ‘yes,’ without hesitation.”

“When I first saw Kobe he was desperately ill,” recalls Dr. Dearani. “His extremities were cool and clammy, which is a sign of a very low ejection fraction. Normal is 60 to 65 percent; Kobe’s was 10 to 15 percent when he was first assessed at Mayo. He was dying.”

The Giesens placed their trust in Kobe’s caregivers. “Shane and I are both accountants,” says Karmen. “We asked lots of questions, and without exception, every physician and caregiver had good bedside manner and answered in ways we could understand. They also incorporated us into Kobe’s routine, enlisting us to help with tasks like bathing him. And when our daughters were here, Child Life specialists would keep them busy with activities like making and suspending kites from the ceiling of Kobe’s room while he was away at tests so that we could talk privately with his doctors.”

Kobe’s condition continued to decline. On June 13, Kobe had an adverse reaction to a medication and also had a stroke that affected his left side. The Giesens prepared themselves to say goodbye to their son. Kobe

needed a new heart — immediately. Because he was dependent on the heart-lung machine, his transplant status was 1-A, which elevated him to the top of the list of pediatric patients awaiting transplant.

**NEW MEANING TO FATHER’S DAY** Shane will never forget Father’s Day 2008. The news came that a heart — although not a great-functioning one — was available. “Kobe was in a very weakened state and we were concerned that he might have more strokes if he had surgery,” says Karmen. “We asked Dr. Dearani what he would do, and he was honest with us. We decided to take a chance on a new heart, even one that had been damaged as a result of resuscitation efforts. It was something we couldn’t turn down.” Hours later, the heart arrived in Rochester.

“Transplant surgery started about 9 p.m. and it wasn’t until 2:30 a.m. that Dr. Dearani came out to talk to us,” Karmen remembers. “He explained that the transplanted heart had an ejection fraction that was nearly the same as Kobe’s own heart.” Consequently, Kobe left surgery with a new heart, but still on the heart-lung machine.

Two days later, with no signs of improvement, Dr. Dearani re-listed Kobe for another heart.

“Kobe is doing so well today as a direct result of everyone persevering and having a ‘never give up’ and ‘whatever it takes’ attitude.”

– JOSEPH DEARANI, M.D.





“It’s hard to ask God for an organ for your child when you know that another family will have to lose a child to make that possible,” says Karmen. “You feel hopeless and numb. You do lots of waiting.”

**THE HEART OF THE MATTER** On June 18, another heart was available. “We asked Dr. Dearani if Kobe could survive another surgery,” says Karmen. “We decided to go ahead.”

When the second transplant started, the Giesens began another long and eerily familiar vigil. Caregivers delivered updates when the incision was made, when the donor heart arrived, and at other key points in the procedure. After about four hours, Dr. Dearani emerged from the operating room.

“Dr. Dearani said the new heart started beating immediately on its own and fit in Kobe’s chest as though it were made for him,” recalls Shane. “When we saw our son at 4 a.m., there were fewer tubes in place and no heart-lung machine.”

Nearly 10 days later, after the sedation had worn off and the breathing tube was removed, Kobe held up his arms, a gesture for his parents to hold him.

**THE HEALING PROCESS** In the days following the second transplant, Karmen stayed in Rochester with Kobe, while Shane went back to work and cared for their daughters in Fargo. He made 16

road trips from Fargo (more than 300 miles one way) to Rochester during Kobe’s hospitalization. Meanwhile, Karmen was learning how to care for Kobe at home, including managing his immunosuppressant drugs and other medications, diet and activity. And, she attended transplant support group meetings for parents while staying close by at the Ronald McDonald House.

Kobe was dismissed from the hospital on July 18. “Before we left, we thanked Dr. Dearani for saving Kobe’s life,” says Karmen. “He was down-to-earth and didn’t sugarcoat things. He said it was a big team.”

“Kobe and his family have been an inspiration to everyone at Mayo who has cared for him,” says Dr. Dearani. “Kobe is doing so well today as a direct result of everyone persevering and having a ‘never give up’ and ‘whatever it takes’ attitude. Kobe holds a special place in many hearts at Mayo.”

The Giesens believe that their son’s experience could not be replicated elsewhere. “The dedicated, expert staff, the technology, even the other patients and visitors we met along the way, you couldn’t find anywhere else,” insists Karmen. She especially remembers a gift from a pastor whose wife was in intensive care. “He gave me something called a ‘Clinging Cross,’ that Kobe held in his hand, and then I held while Kobe was in transplant surgery.”

Following dismissal from Saint Marys Hospital, Karmen and Kobe stayed in an apartment for several weeks to continue follow-up care at Mayo. Back at home, Karmen returned to work. She also manages Kobe’s physical, occupational and speech therapy appointments in Fargo, and at Mayo Clinic.

Today, Kobe is doing well. He faces challenges, including dealing with the side effects of anti-rejection drugs and the stroke he had suffered. Despite these challenges, his spirits are undiminished and he revels in normal activities like running around the house in circles.

“He used to be a cautious child,” says his dad. “Now, he’s fearless.” ✖



*Shane, Kobe and Karmen Giesen*

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## Experience in a crisis



**AN EVENT THAT EVERY PARENT** hopes never to experience happened to Neil Gislason at 8:15 p.m. on Dec. 19, 2007. He was summoned from an advent service into the foyer at the Lutheran Church in Cannon Falls, Minn., where his daughter Teagan, 2, was standing. Stunned by what he saw, he yelled, “Call 911!”

His tiny, tow-headed daughter was whimpering, the handle of a Phillips screwdriver protruding from the upper corner of her left eye. No one saw the accident happen, but it didn’t matter. The screwdriver was lodged in her head. Aided by other churchgoers, a mortified Neil lowered Teagan to the floor to wait for first responders. They arrived just as the toddler lost consciousness and quickly revived her. “I thought we were going to lose Teagan at the church,” Neil recalls.

Teagan was taken by ambulance to Cannon Falls Medical Center — part of Mayo Health System. From there, she was transported aboard Mayo One, Mayo’s emergency medical helicopter, to the Emergency Department at Saint Marys Hospital.

Neil, and wife, Katie, and their daughters Kaylea, 10, and Zoe, 7, drove the 40 miles to Rochester. When they arrived at the Emergency Department, Katie’s mother, Chris Beckmann, a Mayo Clinic employee, was at Teagan’s bedside, comforting her granddaughter.

The screwdriver had penetrated 5 centimeters into the frontal lobe of her brain. The Gislasons took little comfort from the fact that 10 percent of people who have this type of injury do not live long enough to get to the hospital. They worried their daughter

might not survive a surgery. Compounding the reality that Teagan had a screwdriver in her head were medical staff’s concerns that removing the screwdriver might risk more damage, including the possibility of seizures and bleeding.

“We were very emotional and trying to stay calm,” recalls Neil. A Mayo Child Life specialist cared for Kaylea and Zoe and offered them snacks and activities to distract them from their sister’s situation.

“That allowed us to focus on Teagan,” recalls Katie. Adds Neil, “We felt treated like the president. We felt entirely confident in Mayo, and knew we had the best people.”

After about four hours of examinations, assessments, discussions and contingency planning, neurosurgeon Todd Patrick, M.D., Ph.D., announced that the screwdriver would be removed in the Emergency Department. Retraction would be through the path of entry. At 12:15 a.m. on Dec. 20, the screwdriver was painstakingly removed. Astonishingly, blood loss was limited to only a few drops.

Teagan spent a short time in the pediatric intensive care unit and then a couple of days on a general pediatric unit before going home.

The only signs of Teagan’s traumatic experience were eight stitches to close the entry wound, bruising and swelling around the eye, and a patch she wore for a few days.

Now more than a year later, the scar is barely visible. And, according to Teagan’s parents, she is no different than she was prior to the accident. Teagan says simply, “I had a drew-driver in my eye, but I’m okay now.”

“I owe my career  
to Mayo and to my  
physicians there.  
They allowed me  
to have the life I  
worked so hard  
to have.”





**RHONI BARTON BISCHOFF**

East Orlando, Florida



Water skier Rhoni Barton Bischoff, a former world record holder, knows how to navigate rough water behind a speeding boat. Her parents (dad was a water ski competitor and coach), introduced her to the sport at age 2. Today, Rhoni is still zipping across the waves at 34 mph behind a boat on Corner Lake. She's grateful that surgery at Mayo Clinic's campus in Florida enabled her to continue her passion — water skiing.

Barton Bischoff grew up in Southern California and early on — while attending elementary school — started training diligently with her father. By third grade, she was practicing two hours before and after school, in addition to strength training in the gym. That hard work and dedication paid off. Barton Bischoff won her first national water skiing title at age 10; at 13 her first junior world title. From 13 to 17, she won Junior World titles five times.

World-class success at such a young age requires a special motivation. "It's in my blood," says Barton Bischoff. "I do it because I love it." Her parents, she says, never cajoled her into training, and encouraged her to develop interests in cross country, soccer, skating, and dance. But she was always most at home on the water.

"My mother says I was born a fish," says Barton Bischoff, now 33.

In 1994, at age 16, she joined the professional circuit and won the Masters, akin to winning the Masters in golf. Since that first win, she has over 30 professional championship victories. Her skills and dedication to the sport led to a scholarship to Rollins College in Winter Park, Fla., where she earned an English degree and also graduated as the "winningest collegiate water skier of all times" — a title she still holds today.

She stayed in Florida, competed, coached, married and for eight years was senior editor of *Water Ski* magazine. Her career accomplishments include more than 60 first-place titles and more than 90 professional career podium finishes.

**CHOPPY TIMES** But life on the water has exacted a toll on Barton Bischoff's body. During her career, she has torn her anterior cruciate ligament (ACL), broken her collarbone and ankle, and has had three knee surgeries. Every time her conditioning and commitment facilitated resilient comebacks.

That is until the morning of June 7, 2007. After spending the previous day coaching young aspiring water skiers at a camp in California, she awoke with severe stabbing pain in her shoulder blade, and numbness in her left arm, hand and fingers. "I thought I had slept on my arm funny," she says, "but the pain was worse than anything I had ever experienced." She stayed and finished the camp.

Back home in Florida, the pain slowly subsided, but the numbness lingered and severe weakness set in. Days and then weeks of appointments and therapies followed with a health care team that included an orthopedic surgeon, acupuncturist, chiropractor, physical therapist and massage therapist. But she says she got no definitive relief or answers to why her left arm was becoming increasingly weak and numb.

Seven weeks after that June morning, she could not lift a 2-pound weight off her chest. The numbness worsened progressively, forcing her to withdraw from five water skiing events. "An orthopedist had looked at an MRI and thought I had hurt my shoulder," says Barton Bischoff. But with no conclusive findings, he referred her to Mayo Clinic's campus in Florida.



**TIME A CRUCIAL FACTOR** Still, as Barton Bischoff drove to Mayo Clinic on July 17, 2007, for tests and to meet Kathleen Kennelly, M.D., Ph.D., a neurologist, on her mind was the 2007 International Water Ski Championships scheduled for August in Austria.

“When I met Rhoni, she had left scapula winging and she had significant tricep weakness,” says Dr. Kennelly. “She also had difficulty extending her fingers and supinating her arm. The acute onset of her pain could have been due to a brachial plexopathy, but also MRI scans showed a little disc protrusion in the cervical spine. To assist with diagnosis, a nerve conduction study and needle examination was performed and was most consistent with nerve root irritation due to the disc protrusion. These disc protrusions can settle down, and she had started to get a bit better with a short course of steroids. Still, the triceps weakness was very concerning.”

Dr. Kennelly continued to mull over the facts in her mind. “The dilemma was knowing what to do next,” says Dr. Kennelly. “I tend to take a conservative approach, but this is a person whose livelihood depends on strength. With nerve involvement, time is of the essence. I grabbed her films and walked them down the hall to my colleague, Dr. Robert Wharen, a neurosurgeon.”



**A HERNIATED DISC** “One of the great things about Mayo Clinic is that we can collaborate with our expert colleagues and get things done fast,” says Dr. Kennelly. In this case, ‘fast’ was crucial since Barton Bischoff was committed to compete in Austria in just three weeks. On July 23, Dr. Wharen told Barton Bischoff what he had found. “Changes in cervical discs can sometimes be subtle and challenging to discern on MRIs, more so than the larger discs in the lumbar region,” says Dr. Wharen. “Looking at our scans, I could see a disc herniation off to the side. Time was an issue because you don’t know how much time you have left for the nerve to regenerate and recover.”

Barton Bischoff recalls the conversation. “Dr. Wharen sat me on the couch in his office and told me I needed a microsurgical discectomy as soon as possible,” she says. “He gave me an entire plan of attack for surgery and what would happen afterward. I trusted my life and my career with him.”

Still, Dr. Wharen was not without misgivings. “The concern was that we didn’t want her to make the situation worse,” he says. “In spite of the pain, she had continued her practices and was hopeful to regain as much strength as possible to compete. I thought she had a 70 to 80 percent chance of regaining strength in her triceps, allowing her to continue to compete.”

“One of the great things about Mayo Clinic is that we can collaborate with our expert colleagues and get things done fast.”

– KATHLEEN KENNELLY, M.D., PH.D.  
AND ROBERT WHAREN, M.D.

During the discectomy, Barton Bischoff sat with her head stabilized in a halo-like device. A keyhole incision was made at the back of her neck. A system of small dilators was used to spread muscle tissue open, creating an opening to the bone. Through a 15-millimeter tube, Dr. Wharen viewed the affected nerve under the microscope. “I could see a large piece of disc fragment, which was pressing on the nerve that controlled the movement of her left arm,” explains Dr. Wharen.



*Mom and baby Linkin Bischoff relaxing in a hammock*

This microsurgical technique is relatively new. Cervical disc procedures are most commonly done through the front of the neck. For Barton Bischoff, the traditional approach would have required removing the entire disc to get to the fragment, necessitating a fusion and would have prevented her from competing in the upcoming water ski championships.

“I have used this technique with other athletes and know that by minimizing the trauma to muscle you can speed recovery,” adds Dr. Wharen. About 30 similar cervical discectomies are performed at Mayo Clinic’s campus in Florida each year.

Just how much strength and speed Barton Bischoff would recover was uncertain. Yet the outcome was amazing. She did not spend even one night in the hospital. “Three hours after the surgery I was up walking and could turn my head from side to side,” says Barton Bischoff. “It was phenomenal. They told me I might not have recovered the use of my arm if I had waited much longer.”

After one week of recuperation and seven days of physical therapy, she competed as a member of the U.S. Elite Water Ski Team in the 2007 Water Ski World Championships. The competition is held every two years. Barton Bischoff finished fifth in the individual tricks category and fifth overall. In the final portion of the competition, she performed one of her most difficult trick routines and completed it perfectly, leading the U.S. team to win a gold medal. “I gritted it out,” she says. In the following year, she spent time in extensive rehabilitation and reports that she has regained nearly 90 percent of the strength in her left arm.

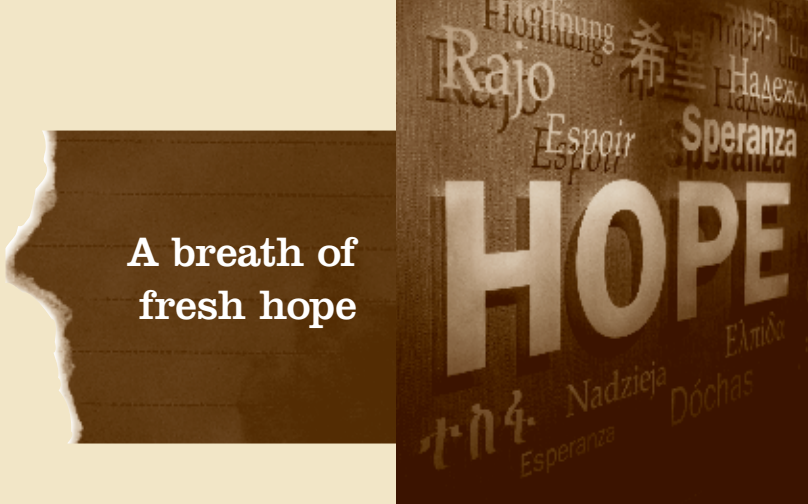
“I owe my career to Mayo and to my physicians there,” says Barton Bischoff. “They allowed me to have the life I worked so hard to have.”

In 2008, she set aside her career a while to have a baby boy, Linkin Thomas Bischoff. Not surprisingly, Linkin now keeps her company in the boat during practice. ✨

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## A breath of fresh hope

**EVERY YEAR, 5,000 PEOPLE** in the United States are diagnosed with amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's disease. It causes nerve cells to degenerate in certain regions of the brain and spinal cord that control the voluntary muscles. Eventually, people who have ALS lose the ability to move their limbs and the muscles required for speech, swallowing and breathing.

Ernie Lorenz of Ocala, Fla., watched his father suffer from the disease until it finally took his life in 1970. "At that time there was little that could be done for him," says Lorenz. Since ALS runs in his family, Lorenz, now 57, had hoped the disease would skip a generation ... sparing him. But as he neared his 30th year of teaching, some unsettling symptoms began to appear. "My handwriting seemed sloppy, and I could tell my sense of balance wasn't what it once was," he says.

In January 2007, a local neurologist did some tests. The results suggested Lorenz had ALS. He came to Mayo Clinic's campus in Florida for a second opinion and the diagnosis was confirmed. Lorenz, who had already lost about 35 percent of his muscle function, became a patient of Mayo's ALS Center, under the care of neurologist Kevin Boylan, M.D.

One area of research focuses on patients who need mechanical assistance with either invasive or noninvasive equipment or a ventilator. "Among its clinical trials is one sponsored by Synapse Biomedical Inc. of Cleveland, Ohio," says Dr. Boylan. "Mayo Clinic's campus in Florida is one of 10 U.S. centers engaged in the study of 100 patients, who have potential to benefit from a

diaphragm pacing system that electronically stimulates the diaphragm to condition the muscle that makes the lungs inflate and deflate.

"One of the essential elements of caring for patients with ALS is being able to offer hope," says Dr. Boylan. For Lorenz, who qualified for the study along with nine other patients at Mayo Clinic, the study offered that hope.

Through a small incision, Dan Smith, M.D., a general surgeon at Mayo Clinic's campus in Florida who specializes in laparoscopic procedures, attached four wires to Lorenz's diaphragm. The wires extend through Lorenz's skin to an electronic stimulation device the size of a small radio. The device, when turned on for daily intervals, stimulates the muscles of the diaphragm to contract and relax — essentially an induced workout.

Lorenz was on and off the device every two hours for eight hours a day for one year. He perceived positive effects. "I believe the device helped me breathe better, sometimes even take deep breaths," he says.

As participating centers await findings that are expected by midyear, Dr. Boylan is cautiously optimistic. "This does not represent a cure, but I am hopeful the study will identify people who can benefit by slowing the progression of diaphragmatic weakness," he says.

Lorenz is wheelchair-bound and uses non-invasive breathing equipment to assist with breathing at night. He hopes that the devices under study may help delay other ALS patients' need for mechanical respiratory support and other assistive equipment as long as possible.

"The toughest job rests with the person who sits at your bedside. I get the medical care, but my wife is the one who gives me support, talks with and listens to the staff, advocates for me, and keeps family members posted. She waited with me."





**WAYNE ZIMMERMAN**

Phoenix, Arizona

## TICK TOCK.

## TICK TOCK.

**For someone waiting for a new heart, time becomes indescribably significant. Ask Wayne Zimmerman. He knows all too well.**

Twenty-eight years as an Arizona Highway Patrol officer had forged this lawman's keen observation skills and quick physical reflexes. But then, heart disease began to rob Zimmerman of energy, his strength and agility. Even his senses dulled. Enjoying simple things, like being a "tinkerer" (his term) handyman around home, grew hard.

His heart was the culprit, he knew, and time was taking its toll. For almost two decades, Zimmerman had been under the watchful care of a cardiologist in Phoenix. Then, in 2005, he learned that his coronary artery disease had gotten worse. He had developed congestive heart failure.

**CHOICES NARROW** With congestive heart failure (CHF), the heart deteriorates over time, losing its ability to supply adequate blood flow and oxygen to meet the body's needs. Weakened, the heart works harder to pump enough blood. To handle the increased workload, the heart may beat faster and enlarge considerably to boost pumping capacity.

But the effects of overwork are cumulative, and eventually, as other interventions (bypass surgery, implanted defibrillators and ventricular assist devices, and medications) slowly become ineffective, the ticking clock winds down to one last choice: a heart transplant. Without it, life ends.

Zimmerman had had a pacemaker implanted in 1990, then a defibrillator in 1996. Eventually, he would be placed on a waiting list for a donor heart.

That list is a long one. According to the Organ Procurement and Transplantation Network, at any

given time, approximately 2,800 patients in the United States are waiting for donor hearts.

In the meantime, the quality of Zimmerman's life was in steady decline.

**BUYING TIME** Zimmerman retired from the Highway Patrol in 1998, and then went to work as an administrator in the Yuma County Sheriff's Office.

"I kept going to work," says Zimmerman, "but avoided stairs and generally did not feel good."

His cardiologist referred him to Mayo Clinic's campus in Arizona. He had bypass surgery in 1990, but his symptoms worsened. In April 2008, he was admitted to Mayo Clinic Hospital in Phoenix, and with medications, shed 40 pounds. He left the hospital feeling better, but not for long.

Two months later, when Francisco Arabia, M.D., a Mayo cardiac and thoracic surgeon, met him, Zimmerman could not walk 50 feet without gasping for breath. "He was in very critical condition," recalls Dr. Arabia. "It was urgent. He was in need of a new heart."

Until he could get a donor heart, an artificial heart would have to suffice. The medical terminology is bridge to transplant.

"Dr. Arabia was warm and caring as he spoke to me and my wife, Sherry, about all the possible risks of the artificial heart," remembers Zimmerman. "We accepted the fact that I needed this until I could get a real heart." At that time, the couple had been married 38 years.

On July 7, 2008, Zimmerman's own heart was removed and an artificial device was surgically implanted in its place. He got the CardioWest™ total artificial heart, the newest generation of the Jarvik 7 heart which was first implanted in a patient in 1982. Although the technology has improved vastly, the device remains cumbersome. Smaller, portable devices are in design.

"We called it 'big blue,'" says Zimmerman. "It was about the size of a washing machine and weighed 400 pounds, with two tubes coming out of it. With each compression, its pump made a sound like a galloping horse."

But another serious concern surfaced. Zimmerman's kidney function was deteriorating. David Mulligan, M.D., chair of the Division of Transplant Surgery, had helped establish Mayo Clinic Arizona's liver/kidney/pancreas transplant program nearly a decade ago. Clinic surgeons now perform about 180 kidney transplants a year, some as a result of heart disease.

"It's common with heart disease for other organs to fail as the heart fails," says Dr. Mulligan. "As Mr. Zimmerman's heart was failing, it no longer had enough blood pressure to perfuse his kidneys."

**ACTIVE WAITING** The wait for a donor heart is no physical cakewalk. "The artificial heart provides time for the patient to grow stronger in preparation for a donor heart," says Dr. Arabia. "Patients are encouraged to exercise in the gym and to walk around the hospital." Along with exercise, Zimmerman had dialysis three times a week to help restore his strength.

The wait period also confirmed for his medical team that besides a heart transplant, he needed a new kidney. "We did a kidney biopsy and other tests that showed he had considerable chronic damage," notes Dr. Mulligan. "His kidneys were not going to get better, even with a new donor heart. Without a new kidney, his mortality risk would be considerable."

A combination heart and kidney transplant, with the patient going from an artificial to a donor heart was a first — anywhere.

"You have to choose patients carefully to pursue a double transplant such as this," explains Dr. Mulligan. Since Drs. Arabia and Mulligan agreed the heart/kidney transplant was necessary, Zimmerman qualified for two transplant waiting lists. Each had an asterisk next to his name that indicated he needed two organs.



"Timing is very important in transplant surgery, as is the fit of the organs. You want to minimize the time the patient has to be in the operating room."

— FRANCISCO ARABIA, M.D.  
AND DAVID MULLIGAN, M.D.



Knowing her husband would be hospitalized indefinitely while he waited for organs to become available, Sherry moved the couple from Yuma to a home in Phoenix that put her within less than five minutes from the hospital.

“The toughest job rests with the person who sits at your bedside,” says Zimmerman. “I get the medical care, but my wife is the one who gives me support, talks with and listens to the staff, advocates for me, and keeps family members posted. She waited with me.”

They only had to wait two-and-a-half months. On Sept. 2, news came that a heart and kidney were available. “They told me they had found me the best heart ... a Cadillac,” says Zimmerman.

Prior to the surgery, Drs. Arabia and Mulligan planned meticulously on how to make the most efficient and effective use of their time in the operating room. “The kidney issues would make the surgery even more challenging and complex,” says Dr. Arabia. “Timing is very important in transplant surgery, as is the fit of the organs. You want to minimize the time the patient has to be in the operating room.”

**TRADING HEARTS** Surgery began about 9:30 a.m. A major portion of the heart transplant procedure involved removal of the artificial heart. “Disconnecting the device from tubes situated under the left rib is a complex process,” Dr. Arabia explains. “All the while, you’re concerned about bleeding because the patient is on blood thinners.”

All went well. After the device was removed, the donated heart was implanted and Dr. Arabia and his team began closing the chest, approximately six hours from start to finish. But, Dr. Mulligan’s work was just beginning.

“In all, there were about 10 of us in surgery, each busy doing our work,” says Dr. Mulligan. “We had to see how the patient was doing to know if we could proceed with the kidney transplant. Sometimes patients will need to go to the intensive care unit for a time before they can handle the next organ transplant. Because Mr. Zimmerman’s new heart was already functioning well, we could do our part of the surgery immediately. It went beautifully. In two hours, the entire team was done.”

“Dr. Mulligan came out to the waiting room and gave me a hug,” remembers Sherry. “He said the new kidney started working even before he had it all hooked up.”

On Zimmerman’s mind when he awoke from the eight-hour surgery was one thought — *I have my heart*. Almost immediately he felt better.

“My color looked better right away,” he says. “Before, I looked like a bleached out t-shirt. Afterward, my loved ones said: ‘Wayne looks like Wayne again.’”

With no signs of rejection, he took his two new organs home on Sept. 18. Sherry says Mayo’s team approach is largely responsible for her husband’s good outcome.

“I could not have been the support to Wayne without the support of so many people at Mayo,” adds Sherry. “We were so well educated by everyone — the transplant coordinators, social workers, nurses, therapists. His cardiologists were wonderful. Everyone expected me to participate in his care, which is important to what needs to happen after you go home. You have to be prepared to get on with living with this new heart.”

Now, Zimmerman’s daily routine includes walking the dog, Hoover, and enjoying life with his wife. Of course, he also does repairs around the house, when necessary.

“I can’t imagine having better care or treatment anywhere else in the world,” says Zimmerman. “My caregivers were phenomenal. They don’t come any better.” ✨

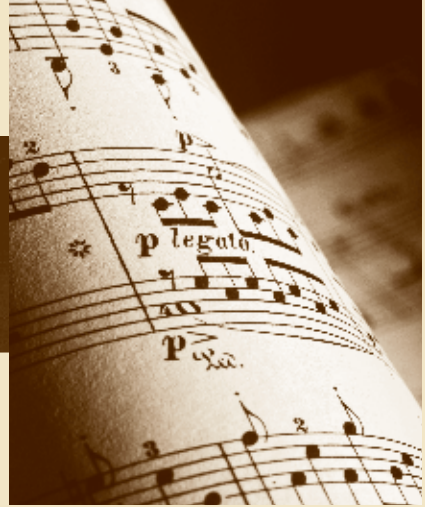
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## Ventricular assist device: A second chance at life



**AFTER 36 YEARS** as a choral music teacher and accompanist, Verna Schrombeck of Lowell, Ind., is playing the piano — again. Robbed of her strength by a heart disease, she's been given a second chance with a new device that changed her heart and her life.

In 1992, Schrombeck was diagnosed with dilated cardiomyopathy, a disease in which the heart muscle becomes weak and the heart chambers enlarge (dilate). Increasingly, the persistent, severe fatigue made it necessary for her to leave school to rest. With each passing month, the piano music that once beautifully flowed through her fingers was slowly being silenced. She retired in 1993.

Her condition did not follow a usual pattern. After four years, she regained strength. But over time, the disease — and its treatments — took a toll. “My fingers wouldn't work and I wasn't healthy enough to sit at the piano,” explains Schrombeck.

Eventually, she says, she was referred to a specialist in Chicago where she was told she needed mitral valve surgery. But a second test convinced the specialist the condition was untreatable. “I thought there was no hope for me,” recalls Schrombeck. “No one could spell out in plain language what was happening to me.”

She knew she had to make a decision.

“I decided to go to Mayo Clinic where I knew I would learn the entire truth about my condition,” she says. “Then, I could deal with it.”

In August 2007, after a series of tests and consultations, cardiologists at Mayo Clinic's

campus in Rochester, Minn., diagnosed her with end-stage heart failure. Following their first meeting, Margaret Redfield, M.D., a cardiologist, described Schrombeck as “thin, frail, and short of breath all of the time. Still, she had a zest for life.”

The full gravity of the diagnosis hit home when Soon John Park, M.D., a cardiac surgeon, told Schrombeck she had six months to a year to live. “His words were quiet, calm and confident,” she says. “I wasn't shocked, just sort of numb.”

Still, she was enormously encouraged to learn that she qualified for a clinical trial of a ventricular assist device (VAD).

On Sept. 26, 2007, Dr. Park implanted a ventricular assist device during a four-hour surgery. He connected the device to the heart's left ventricle, its main pumping chamber, and to the main artery carrying blood away from the heart to the rest of the body.

Schrombeck is delighted with her own results, even as findings from the clinical trial are still pending, as well as approval by the Food and Drug Administration,

“I feel like a new person,” she says. “I don't need oxygen. My energy came back slowly and so did a healthy weight.”

The device has necessitated changes in her daily routine, but Schrombeck dismisses them as minor inconveniences compared to the added years of music and life she hopes to enjoy with family, especially with grandchildren, who now enjoy playing duets with their grandmother. “I play boogie and Beethoven,” adds Schrombeck.





**ANNA LLEAL**  
Rochester, Minnesota



Each year, more than 5,000 international patients from about 125 countries travel to Mayo Clinic in Rochester, Minn., to seek diagnosis and treatment for common and complex conditions, second opinions, or advanced treatments not available in their own countries. Most are self-referred. Many are referred by their physicians. Others come through embassies and international government offices.

Facilitating international patient visits is what Anna Lleal provides as an international representative. A native of Barcelona, Spain, she was a registered nurse prior to moving to the United States. She has worked for Mayo for more than 20 years, first as a Spanish interpreter, and now in an administrative position within the International Center.

She spends little time behind her desk. “The best part of my day is mingling with patients,” says Lleal, “answering their questions, setting a tone that makes them feel welcome at Mayo, and establishing a relationship with them.”

Lleal and her colleagues extend services to help close the distance between Mayo Clinic and international patients — before and during their visits here.

**FIRST CONTACTS** For patients from distant lands, the sound of a telephone operator’s voice often influences their first impressions of Mayo. Patients who call Mayo Clinic are connected with the International Appointment Office, staffed by operators who are trained to field frequently asked questions and facilitate appointment scheduling.

“Some specialties want to review a medical report prior to assigning an appointment time,” explains Lleal. “This includes a recent medical summary in English, with a diagnosis, pathology reports and their local physician’s treatment plan.”

Once appointments are scheduled, confirmation letters are e-mailed or faxed to patients, along with information about

transportation and lodging. Responding quickly to patient requests is paramount. “We are eager to establish a rapport with patients,” says Lleal. The goal is to acknowledge receipt of a request for an appointment the same day the request is made.

An increasing number of patients e-mail appointment requests through [www.mayoclinic.org/international](http://www.mayoclinic.org/international), which prompts them to complete a Mayo Clinic Internal Services Request form. The form asks for the patient’s primary language, whether an interpreter is needed, and a requested appointment date.

**ON ARRIVAL: GETTING ACQUAINTED** A first stop for international patients arriving in Rochester is the International Center on the Mayo Building’s main floor. A banner — imprinted with the word ‘welcome’ in more than a dozen languages hangs at its entrance.

A receptionist greets visitors and directs patients to staff who can assist with many facets of their Mayo experience. Registration staff and Account Services representatives answer pre-authorization and admission questions, and billing, insurance and embassy-related inquiries.

“Visitors are given a tour of the center and a brief orientation about Mayo to help them feel welcome,” says Lleal. Orientation sessions for new patients are available at 10 a.m. and 2 p.m. during the workweek.

“We provide information intended to help them get around the campus and make their medical appointments as effective as possible,” explains Lleal. “As one example, patients needing interpreter services are given a card to present to Mayo staff requesting interpreter services, for languages including Bosnian, Arabic and Turkish.”

Interpreters in about 30 languages are available at no cost. And guides and maps of Mayo Clinic are available in Spanish and Arabic.

“Interpreters play an extremely important role in the experiences of international patients,” Lleal explains. “They communicate with caregivers on their behalf during appointments and make them feel safe and at ease.” In addition, Mayo Clinic provides written translations of patient education materials and communications from physicians to patients.

In March, Mayo Clinic opened a 1,500-square-foot International Hospitality Center on the skyway level of the Kahler Grand Hotel, located across the street from Mayo facilities. Staffed by Mayo Clinic employees, international visitors can make restaurant reservations, book tours of the area, and secure tickets for theatre performances.

A travel desk located next door and run by a private travel agency, can facilitate lodging and travel arrangements for international patients and their families, regardless of where they are staying in the city.

With hours from 9 a.m. to 9 p.m., the International Hospitality Center offers patients a gathering place between appointments or at the end of their clinic day, where they can socialize with other international visitors. Patients and their family members can watch cable television, check their e-mail, meet other patients from their home countries, or simply relax in the quiet atmosphere of the center.

With space to seat 60 people, the center features Internet-linked computers, access to interpreters by phone, and work rooms furnished with computers, which can be closed for privacy. The location of the center also gives patients easy and warm access by skyway to downtown shopping and restaurant options.

*The Mayo Clinic International  
Hospitality Center*



Early reaction to the International Hospital Center has been positive as international patients express gratitude for the extension of Mayo's hospitality into the evening hours. "The International Hospitality Center is a good place for families and friends to gather," says Lleal. "It's like a living room away from home."

**A QUIET HAVEN** The International Center has an important connection to Mayo history and hospitality. Mayo Clinic's founders, Drs. William and Charles Mayo, traveled internationally and hosted guests from around the world. The brothers developed enduring professional and personal associations with international visitors, exchanging medical knowledge and nurturing cultural appreciation. Their example of extending hospitality to visitors from afar continues today. "Our goal is to make the center feel like a home away from home," says Lleal. "Some patients are here only days; others are here weeks or months."

Patients can be found in the center reading the *International Herald Tribune* (the global edition of the *New York Times*), *EL PAIS* (from Spain), and *LaJornada* (from Mexico); and Arabic-language newspapers. They also have access to computers, e-mail, fax machines, and cable television.

Even for seasoned patients like José Moragas, M.D., and his wife, Teresa, of Barcelona, a visit to the center is a pleasant part of their Mayo experiences.

The Moragases lived in Rochester from 1954 to 1957 during Dr. Moragas' dermatology residency in Mayo Graduate School of Medicine. He was the first physician from Spain to train at Mayo. During those years, he forged a deeply rooted loyalty to Mayo Clinic as a health care provider for himself, his wife, family members, friends, and patients whom he refers here every year from his private dermatology practice in Barcelona.

"At Mayo you get global opinions," he explains. "In Spain, you can find good care, but it's disconnected. The real advantage here is that you get a doctor who oversees all your test information, and then you get one opinion."

The International Center can be an oasis of calm between medical appointments. "The International Center is a good place to have a cup of coffee," says Dr. Moragas. "People from abroad may be a bit overwhelmed by Mayo and are sometimes fearful of walking around by themselves. It helps to have staff members who can direct you, and to meet people from other countries who know their way around Mayo and the community. Even as many years as my wife and me have been coming here, we still discover new things."

To Lleal, it is this kind of gratitude that makes her work rewarding. "It's so satisfying to see that even the smallest kindness makes a difference in patients' experiences here," she says. "Traveling distances to get here when you're ill is stressful. We want our international patients to know that we're here to help make this the best health care visit possible." ✖

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*The International Center provides a variety of helpful brochures in many languages*





## Making global connections: care on wheels



**IMAGINE LIVING IN A THIRD WORLD** country where treacherous, mountain roads separate you from the nearest hospital. Then imagine having a serious illness or traumatic injury and walking six hours or riding a horse to get help.

In February 1995, Paul Tschann, a registered nurse in Surgical Services at Mayo Clinic's campus in Rochester, took a two-week hiatus from his Mayo job to do mission work with the International Health Service in Honduras. Those two weeks became two years.

"I learned the language and fell in love with the people," says Tschann, who was accompanied by his wife, Monica Capra, a special education teacher, and their four children. "Many live in 10-foot by 10-foot adobe or tin huts, and work an average 16-hour day cutting trees or doing crop work. They make \$5 a day."

Tschann did general and clinical nursing, and traveled with physicians and dentists to provide basic health care to underserved peoples living in remote villages. Eventually, he managed a small clinic and saw firsthand how Hondurans struggled to afford medications and other basic medical supplies.

Tschann's prior experience had prepared him for this work. Outside of his Mayo Clinic experience, he had volunteered years earlier for a local ambulance service. During that time, he met Tom Beniak. In 2003, during a short visit back to Rochester, serendipity put Tschann back in touch with Beniak, now an assistant coach with Gold Cross Ambulance operations. The chance meeting while on vacation at a campground led to another step

to reach more Hondurans with health care.

"Hondurans living in remote villages, including those who are seriously ill or injured, have no access to public or private transportation to get to the capital city of Tegucigalpa," explains Tschann. "Sometimes you can get a ride on a converted bus in daytime hours. Roads to the city often wash out, they have no painted lines and you frequently dodge chickens, cows and other motorists."

As Tschann described the medical needs of Honduras, Beniak mentioned the possibility of Gold Cross donating an ambulance. Gold Cross Ambulance provides advanced life support ground ambulance service, and is part of Mayo Clinic Medical Transport, which provides a full spectrum of ground and air medical emergency transport.

"Gold Cross knows everything about its vehicles, including their entire service records, and that even in semiretirement they will last a long time," explains Beniak. "Gold Cross has donated 39 decommissioned ambulances to first responder agencies in the U.S. Knowing the need in Honduras, Gold Cross decided to make this its first international gift."

"To the people in Honduras, an ambulance represents concern about their welfare, compassion and a wonderful gift," says Tschann.

Tschann has returned to work at Mayo Clinic's Rochester campus, but much of his heart remains invested in Honduras. He and his wife adopted a son from that country, and return frequently to continue their humanitarian efforts.

“Because Mayo sees so many complex and rare diseases, I saw things here I might not see elsewhere.”



**LAUREN MORITA**

Kailua, Hawaii



Television shows like CSI (the initials for crime scene investigation) are inspiring a new generation to pursue careers in pathology. Take Lauren Morita of Kailua, Hawaii. In college, she focused on the sciences. “I was considering a career in forensic pathology, but decided I didn’t want to look through a microscope all day,” she says. “I wanted to use my eyes to examine and describe tissue.”

During an internship at a pathology laboratory in Oregon, she met two graduates of the Pathologists’ Assistant Program at Quinnipiac University in Hamden, Conn. Convinced that working with tissue was her passion, Morita applied and was accepted into the Quinnipiac program.

One of six master’s-level programs in the United States, Quinnipiac’s curriculum offers students one year of classroom learning, followed by a year of clinical experiences at partnering health care institutions. Mayo Clinic’s campus in Rochester, Minn., through Mayo School of Health Sciences (MSHS), is one of those partners.

**PROGRESS IN THE PROFESSION** According to Carrie Trower, coordinator of the MSHS Pathologists’ Assistant (PA) Program, students who come to Mayo experience the inner workings of a world-class autopsy suite and frozen section laboratories, part of a Pathology Department that has made groundbreaking contributions to the profession. “The rotation is especially valuable because it exposes students to Mayo’s pathology expertise, processes, service and volume,” says Trower.

Each year, tissue samples are taken from thousands of patients at Mayo during surgeries or surgical biopsy procedures to identify the nature or source of medical problems. Even though patients don’t see what happens to those samples, analysis of them is critical to accurate diagnosis, and to timely and effective treatment.

“The services of the Department of Laboratory Medicine and Pathology are unique here because specimens are often given a full diagnosis at the time of surgery,” says Gary Keeney, M.D., chair, Anatomic Pathology, Mayo Clinic Rochester. “No one else in the world does this.”

Surgeons and patients don’t have to wait for results. If the first specimen is inconclusive, surgeons can take another sample while the patient is still on the operating table, avoiding the need for a second surgery and extended hospitalization.

The technique, known as frozen section, helped make the speed of this process possible, and was pioneered by Louis B. Wilson, M.D., who joined Mayo in 1905 and founded its Pathology Department.

Dr. Wilson had a particular expertise in the analysis of fresh surgical specimens and developed a method that could be used during surgery to accurately diagnose diseased tissues. Using a methylene blue stain, he would prepare fresh tissue sections from the operating room and place them outside the window of his laboratory in the bitter cold of winter. Within minutes, the fresh-frozen section could be examined under a microscope. Today, refinements to this technique are applied around the world.

**HIGH VOLUME, FAST TEMPO** Students see history applied every day in the work of pathology professionals. “Among my first impressions of Mayo was the expertise of the staff,” says

Morita. “When everyone is skilled at what they do, it enables you to do your best work. I was also impressed by the organization of everything in the pathology laboratories.”

Pathology assistant students observe work flow and teamwork. “This is an extremely dynamic place in which to learn,” says Trower. “Students interact with staff pathologists, residents, and surgeons — everyone on the team. They learn to appreciate what all team members contribute.”

Most days in the Frozen Section Laboratory at Rochester Methodist Hospital begin before patients arrive in the surgical suites. Pathologists, fellows, residents, pathologists’ assistants, and educators, confer about X-ray images and the findings of previous pathology reports to get acquainted with each of the day’s upcoming surgeries.

The Frozen Section Laboratory has a quick pace as tissue is cut by pathologists’ assistants and residents. Slides are made and passed from residents to pathologists. Images are then projected centrally in the room on a 42-inch display monitor. In this teaching environment everyone in the lab can see the enlarged image and learn from it.

“The pathologists are here to work with you,” says Morita. “And, the pathology assistants were eager to show me unique sections and to explain how they approach gross examination. This is an academic setting, and the staff is always willing to teach.”

#### CULTIVATING COMPETENCE AND COMPASSION

Sometimes, a pathology finding will stop or change the course of a surgery. “We have the opportunity to be advocates for patients by speaking up when we think more tissue is needed to make a sound diagnosis,” says Trower. “Pathology assistants sometimes see complicated margins and will go to the operating room to consult with the surgeon about additional specimens, which, for example, might be found to be a recurrent tumor.”

At Mayo, Morita observed a unique form of compassion shown to every patient. “Even tissue samples are treated with respect because they belong to individuals,” she says. “They’re not just specimens.”



“This is an extremely dynamic place in which to learn. Students interact with staff pathologists, residents, and surgeons — everyone on the team.” - CARRIE TROWER

Students also see the application of innovative technology. Unlike most pathology laboratories, which use cryostat machine technology, Mayo employs a tested and time-proven device called a freezing microtome. With this equipment, a technician can cut and examine not only solid tumors, but also fatty tissue or fatty tumors, which cryostat technology cannot. Specimens reveal the stage or extent of tumors, reported to physicians and surgeons based on a grading system to help chart a course for treatment.



*Trower and Morita reviewing a digital specimen*

Just like staff members, students rotate to different clinical settings. The rotation modulates work pace and the intensity of the mental workload. Among Mayo's pathologists' assistants, longevity can be attributed, in part, to the variety of work that comes with weekly rotations to different Mayo Clinic pathology areas on campus in Rochester. Skills stay up-to-date and intellectual curiosity is stoked constantly, invigorating the work environment.

Morita has spent much of her time at Mayo in the autopsy suite, performing postmortems, and obtaining hands-on dissection experience under the supervision of pathologists, pathologists' assistants and Trower. "To me, human anatomy is the most appealing aspect of pathology," Morita says. "In the autopsy suite, you not only remove and examine organs, you read the patient's medical history and learn about disease processes. Because Mayo sees so many complex and rare diseases, I saw things here I might not see elsewhere."

Students like Morita can expect satisfying careers. At Mayo, pathology assistants are valuable members of the team. The pathologists' assistant specialty is a relatively new field," says Dr. Keeney. The American Association of Pathologists' Assistants, founded in 1972, now has more than 1,200 members around the world.

Morita, now in the final stretch of the two-year program, is about to conclude her two-month stay at Mayo before moving on to one last clinical rotation. Then, it's on to starting her career.


"I'm excited to put my knowledge to use," she says. "I've learned all along the way from everyone I've met." ✖

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## Reengineering research to hasten better care

**THE HUMAN GENOME PROJECT**, referred to as biology's moonshot, was an international effort launched in 1990 to map and sequence all of the genes in the human body (known collectively as the genome). By 2003, the goal was accomplished — two years ahead of schedule. As the science of genomics advances at breathtaking speed, researchers and physicians anticipate a not-too-distant future in which medications are tailored to the exact genetic makeup of each patient — an approach to care that is known as individualized medicine.

Mayo Clinic is at the forefront of the individualized medicine movement through its support for initiatives such as the Mayo Clinic Center for Translational Science Activities (CTSA). Created in 2006 by an innovative National Institutes of Health (NIH) infrastructure grant and complementary institutional support, this multidisciplinary research and education center provides training, mentoring, consultation and facilities for research teams at Mayo Clinic. These resources help remove any barriers that might impede progress and help ensure that researchers' and physicians' important findings are quickly, efficiently and effectively applied to patient care.

The CTSA supports the work of many pioneering researchers, such as Richard Weinshilboum, M.D., chair, Division of Clinical Pharmacology, and director of the CTSA Pharmacogenomics Core.

For decades, oncologists, in prescribing chemotherapy drugs to patients, accepted toxicity as an unwanted but often unavoidable

side effect of treatment. But pharmacogenomic research, extending back for years, had opened the door to predicting how a patient's body uses or metabolizes a drug. This approach offered the possibility of choosing the most effective drug and dosage, while avoiding severe, life-threatening drug reactions.

In 1980, Dr. Weinshilboum's research resulted in the discovery that the genetic variation in the activity of an enzyme, thiopurine methyltransferase (TPMT), can have a dramatic effect on drug response. This historic finding helped explain why the same dose of an anti-cancer drug, 6-mercaptopurine (6-MP), cured most children with acute lymphocytic leukemia (the most common childhood cancer), but other children suffered severe, life-threatening adverse drug reactions. This discovery led Mayo Clinic to develop a blood test that can identify which children should receive one-tenth of the normal dose of 6-MP. Consequently, the discovery has helped save lives, and led the Food and Drug Administration to approve adding pharmacogenomic information to drug labels.

"Dr. Weinshilboum's work serves as a perfect example of what the CTSA was created to accomplish," says Robert Rizza, M.D., director of the Mayo Clinic CTSA. "His work connects the basic science of pharmacology with clinical research in cancer, and translates the results into effective, safe treatments for patients. His work spans education, research and patient care, and is representative of the work the CTSA supports in order to expedite medical progress."

**Mayo Clinic brings together teams of physicians, nurses and other allied health professionals to diagnose and treat medical problems. Thousands of patients come to Mayo Clinic every day for accurate diagnosis and the highest-quality care. Most patients are treated on an outpatient basis. Many patients make their appointments themselves — often, a doctor’s referral is not necessary.**

**MAYO CLINIC PATIENTS**

Total clinic patients*	526,000
Hospital admissions	132,000
Hospital days of patient care	627,000

\* Rochester, Florida and Arizona only

**MAYO CLINIC PERSONNEL** *(number of employees)*

Staff physicians, medical scientists and clinical and research associates ...	3,700
Residents, fellows and students and other temporary professionals.....	3,200
Administrative and allied health personnel .....	50,100
<b>TOTAL.....</b>	<b>57,000</b>

- Mayo Clinic celebrated the opening of a new, 214-bed hospital at its Florida campus, uniting hospital services, specialty care and physician visits in one location. Construction of the new hospital allows for the flexibility to support new technologies as well as evolving practice standards and methods. The six-story hospital has the built-in capacity and infrastructure to be expanded to meet future patient needs.

- Mayo Clinic launched a new era of research and treatment of orthopedic practice with the dedication of Mayo Clinic W. Hall Wendel Jr. Musculoskeletal Center in the Gonda Building in Rochester. One of the most advanced orthopedic centers, the facility offers a complete one-stop clinical experience for diagnostic services, treatment and rehabilitation, all without leaving the center.

- Mayo Clinic completed its 50th heart transplant on its Arizona campus since the program opened in September 2005, representing not only a significant milestone for Mayo, but also for Arizona’s Maricopa County. Previously, patients had to travel outside of the greater Phoenix area for a heart transplant.

- Mayo Health System announced the creation of a new research network to give the health system's providers more opportunities to participate in medical research. The Mayo Health System Practice Based Research Network will improve patient care by helping providers design and test best practices in patient care. Mayo Health System is a network of clinics and hospitals serving 70 communities in Iowa, Minnesota and Wisconsin.

- Mayo Clinic and IBM collaborated to establish a medical imaging research center aimed at advancing medical imaging technologies to improve the quality of patient care through quicker diagnosis and development of better treatments. The Medical Imaging Informatics Innovation Center (MI3C) is an extension of a Mayo-IBM collaboration announced in 2007, the results of which have dramatically improved medical imaging speed.

- Neurosurgeons at Mayo Clinic's Florida campus say using a three-dimensional (3-D) image-guided system to help place screws in the spines of patients results in safe and accurate surgery with a decrease in the number of misplaced screws, and subsequent injuries, seen in more traditional operations. Based on the success of the technique, the image guidance system is now being used in all such operations.

- Mayo Clinic pulmonary researchers have designed and tested a new patient education computer program using computer-based simulation that will help people with asthma manage their disease. The program allows asthma patients to practice making key decisions in a safe, simulated environment.

- The Mayo Clinic Center for Tobacco-Free Living opened in the Gonda Building in Rochester. The center features interactive programs and unique ways to better inform and encourage people in the fight against tobacco use and dependence.

- An imaging technology developed by Mayo Clinic researchers has shown an ability to identify liver fibrosis with high accuracy and help eliminate the need for liver biopsies. Magnetic resonance elastography, or MRE, produces color-coded images that indicate the stiffness and elasticity of internal organs muscle and tissue. This information is useful in identifying a broad spectrum of liver disease.

- Mayo Clinic introduced a new emergency medical helicopter to its Mayo One fleet to transfer medical and trauma patients who are critically ill or injured and need rapid transport. The helicopter was customized to incorporate many high-tech features and the latest in safety advancements. It is among the most advanced aircraft and well-equipped medical transport helicopter in the country.

#### **HONORS AND ACHIEVEMENTS**

- *Fortune* magazine in January 2008 announced that Mayo Clinic was named to its list of the "100 Best Companies to Work For," the magazine's 11th compilation of companies that "rate high with employees." Mayo was 59th on the list in 2008, the fifth consecutive year Mayo has appeared on the list. The magazine cited the clinic's "hire for life" recruitment philosophy and an annual turnover rate of 6.9 percent that is less than half the national average for hospitals.

- Following a mid-December on-site review by the Joint Commission, Mayo Clinic's Florida campus was awarded the Gold Seal of Approval for stroke care and re-accredited as a Primary Stroke Center.

- The National Business Group on Health, a nonprofit organization of large employers, honored Mayo Clinic for its commitment and dedication to promoting a healthy workplace and encouraging a healthy lifestyle for its employees and families. Mayo Clinic received a Gold Award for its LiveWell program. The 2008 award marked the fourth consecutive time Mayo Clinic has received the award.



Biomedical research at Mayo Clinic includes outstanding programs in laboratory science, which lead to new treatments and a better understanding of disease, and clinical research, which help Mayo translate research breakthroughs quickly to the care of patients. Most Mayo medical staff participate in research activities in addition to their medical practice.

#### RESEARCH PERSONNEL

Mayo physicians and medical scientists .....	368
Students .....	555
Allied health personnel .....	2,239
<b>Total.....</b>	<b>3,162</b>

*Mayo's integrated practice encourages and enables many to play a role in advancing medical research. The number of staff with some part of their time dedicated to research activities totals more than 6,000.*

- Mayo Clinic researchers have discovered a way of controlling viruses used in potential cancer therapeutics. Viruses are being used in therapies for cancer. However, there has been concern over the potential for viruses to damage healthy tissues. By engineering the viruses' genetic sequence, using microRNAs, researchers are able to restrict them to specific tissues.

- Researchers at Mayo Clinic found a gene mutation in one family that is linked to a hereditary form of atrial fibrillation. Researchers hope this discovery will lead to better understanding of the disease and, eventually, better ways to predict, prevent and treat the heart rhythm problem.

- Mayo Clinic researchers have identified a potential new therapeutic target for progressive multiple sclerosis (MS). A new Mayo Clinic study found that two particular enzymes were elevated in patients with progressive MS. The levels of these enzymes also were associated with the patients' levels of disability. These findings give researchers new hope in developing a therapy for patients with progressive MS.

- In a study of two critical properties of cancer cells – their ability to divide and establish new tumor sites – Mayo researchers found a protein that acts as a deadly master switch, freeing cancer cells from a tumor while ramping up new growth. Researchers believe these findings could help explain why in some solid tumors, such as breast, lung, kidney, and melanoma, loss of E-cadherin is associated with a more aggressive, less treatable prognosis.

- A Mayo Clinic study found that people with a history of strokes had a greater likelihood of developing mild cognitive impairment, a disorder of the brain that affects memory and thinking abilities. Individuals with mild cognitive impairment often have difficulty remembering details of conversations, events and upcoming appointments.

- The Mayo Clinic Center for Translational Science Activities introduced a Mobile Research Unit vehicle with the goal of increasing community engagement in research studies. Mayo researchers will use the vehicle to go out into communities throughout southeastern Minnesota for clinical research projects.

- Mayo Clinic researchers have developed an improved statistical model that could help ensure that the sickest patients receive liver transplants first. Researchers found that including serum sodium concentration in the statistical model used for evaluating patients could reduce by 7 percent the number of patients (as many as 50 people) who die each year while waiting for a liver transplant. Low serum sodium occurs in patients with advanced liver disease.

- Mayo Clinic researchers demonstrated the ability of two prominent tumor suppressor genes, *p16* and *p19*, to speed up and slow down the aging process in animal models. Scientists showed that *p16* accelerates cellular aging, while *p19* stops that process.

- A new Mayo Clinic study found that young-onset dementia, developed prior to age 45, often is caused by neurodegenerative or autoimmune/inflammatory conditions, but only rarely by Alzheimer's disease. This differs substantially from the common causes of dementia in older individuals and is important because many of these diseases may have specific treatments.

- Mayo Clinic researchers have found that patients who have primary biliary cirrhosis are more likely to have specific inherited variations of particular immune genes, and that the specific gene alterations may be responsible for progression of the disease. This new information may help physicians better predict patient outcomes and choose the most effective treatment for each individual.

#### **HONORS AND ACHIEVEMENTS**

- Transplant programs at Mayo Clinic's Arizona campus were studied by other transplant centers around the country as part of a national effort to improve transplant outcomes. The effort, the Transplant Growth and Management Collaborative, is designed to examine the most successful U.S. transplant programs, identify their strengths and best practices and disseminate those practices to other transplant centers.

- The Cardiac Rehabilitation Program at Mayo Clinic's Arizona campus has received accreditation from the American Association of Cardiovascular and Pulmonary Rehabilitation. To receive accreditation, Mayo Clinic's program was evaluated over a 12-month period for adherence to national guidelines and standards of excellence in 19 categories, including patient safety and treatment protocols.

- Mayo Clinic Hospital in Phoenix was among only 33 hospitals in the U.S. named a 2008 Top Hospital by the Leapfrog Hospital Survey. The survey is recognized as the nation's premier hospital patient safety evaluation tool.

**Mayo Clinic offers educational programs and training opportunities on its three campuses to those pursuing careers in medicine, research and the health sciences. The College of Medicine, Mayo Clinic, includes five schools.**

**MAYO SCHOOL OF GRADUATE MEDICAL EDUCATION**, the oldest of Mayo's five schools, has trained more than 17,000 alumni in virtually all medical specialties since 1915.

Clinical residents and fellows .....	1,469
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**MAYO GRADUATE SCHOOL**, in operation since 1917, focuses on six biomedical subspecialties. The school graduates around 50 master's and Ph.D. students per year. The school also serves the educational needs of visiting predoctoral students and Summer Undergraduate Research students.

Predocloral and other students .....	271
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**MAYO MEDICAL SCHOOL** has trained and graduated more than 1,000 students since 1972. The school enrolls 50 students per year, and it also trains visiting medical clerkship students and Summer Minority Medical Students.

Medical and other special students .....	169
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**MAYO SCHOOL OF HEALTH SCIENCES** was established in 1973, and has increased its enrollment to over 1,453 students annually. The school provides education in over 45 health science professions, offering programs ranging from clinical internships through clinical doctorate.

**MAYO SCHOOL OF CONTINUING MEDICAL EDUCATION** formally began in 1996. It offers approximately 269 courses and 7,466 hours of continuing medical education each year.

**EDUCATION FUNDING SOURCES** (in Millions)

Extramural funding .....	\$45
Mayo funds .....	\$180
<b>Total funding .....</b>	<b>\$225</b>



- A study of Internet-based education, led by a team of education researchers from Mayo Clinic, concluded that online education generally is effective. Researchers reviewed more than 200 studies about Internet-based instruction and concluded that across a wide variety of learners, learning contexts, clinical topics, and learning outcomes, Internet-based instruction appears to be as effective as traditional methods as a way to teach health care professionals.

- Staff from throughout Mayo Clinic gathered in 2008 for the 13th annual conference on quality, “Strengthening a culture of safety together.” The Quality Conference featured presentations, posters and addresses from dozens of quality efforts throughout the Mayo system, including measures to integrate improvement efforts into daily work, patient safety advances, service enhancements, and national efforts to improve quality in health care.

- All 32 Mayo Medical School seniors who participated in the 2008 National Residency Matching Program successfully matched with a residency program. Forty-one percent of the medical school’s graduating seniors planned to complete their residencies at one of the three Mayo Clinic campuses. Mayo School of Graduate Medical Education also had impressive results.

- Fifty continuing medical education (CME) experts met in September 2008 at the Mayo Clinic Consensus Conference on Continuing Medical Education to consider transforming the CME process. Their goal was to evolve CME from a peripheral activity to a centerpiece of a physician’s lifelong professional development that links reliably to cost-effective, excellent health care. Co-hosting the conference were Mayo Clinic, the Accreditation Council for Continuing Medical Education, and the Society for Academic Continuing Medical Education.

- The Mayo Clinic conference, Women’s Cancers 2008: Merging Science and Care, brought together patients, their families, the public and medical professionals to share the latest information on diagnosis, prevention and treatment of women’s cancers.

- Mayo Clinic was featured in a Minnesota History Center exhibit celebrating Minnesota’s 150th year as a state. Mayo Clinic’s exhibit showcased Mayo’s tradition of providing the best care to every patient every day through integrated clinical practice, education and research. Mayo Clinic’s Historical Unit loaned a surgeon’s switchboard with buttons for various doctors to indicate their presence (including the Mayo Brothers), a pneumatic tube carrier, eyeglasses worn by Drs. Will and Charlie Mayo, Dr. Edward Kendall’s Nobel Prize, several surgical instruments, and other items.

- The College of Medicine created a new Education Office for Diversity to advance diversity across all the schools and units of the College of Medicine. The Office for Diversity is responsible for guiding Education’s strategic goal for diversity, working with schools and units across the College of Medicine to optimize recruitment, matriculation, acculturation, and retention efforts in support of Mayo Clinic’s overall diversity goals.

- Mayo Clinic launched a new Diversity in Education blog to reach out to and welcome diverse populations by sharing information about Mayo Clinic. The blog offers the opportunity for prospective students to ask current students and staff questions about Mayo Clinic and the institution’s educational programs. The Diversity Blog is one of many connections between the College of Medicine and those interested in Mayo’s education opportunities.

**Mayo Clinic is driven by its mission of providing the best patient care to every patient every day through integrated clinical practice, education and research. As a not-for-profit institution, Mayo invests all of its net operating income back into programs that support this mission.**

The year 2008 was difficult for Mayo Clinic from a financial perspective, as it was for the broader U.S. economy, and Mayo ended the year in a break-even position. As the nation's economic slowdown began to affect Mayo's financial outlook, the institution took steps to improve its practice and other operations. Mayo saw some improvement, thanks to the hard work of Mayo staff.

In difficult financial times, Mayo's mission — *the needs of the patient come first* — and our strategic priorities — quality, integration, individualized medicine and the science of health care delivery — serve as our guide. Although the economy is a significant concern, Mayo leaders remain confident that Mayo Clinic is on solid footing and will continue to help create the future of medicine.

During 2008, patient volumes remained steady across the system. Mayo Clinic cared for 526,000 patients at its three campuses in Rochester, Florida and Arizona. Mayo Health System — a family of clinics, hospitals and other health care facilities serving 70 communities in Minnesota, Iowa and Wisconsin — continued to grow.

Despite continued patient demand and steady patient volumes, Mayo ended the year \$133 million below plan in all operations, including patient care, research, education, diversification activities and gifts that support these operations. Mayo's expenses significantly outpaced revenue in 2008 — expenses grew 7.6 percent compared to a 4.5 percent growth in revenues. Income from patient care was \$205 million, which was \$107 million below Mayo's goal. The margin from patient care was 3.4 percent, well below Mayo's minimum margin target of 4.9 percent.

As Mayo Clinic looks to 2009, strong financial performance is necessary to meet increased pension payment obligations and prepare for other significant financial challenges that lie ahead, including a growing number of Medicare patients as the baby boomers approach retirement age and constrained resources in general.

Mayo's response includes expense reduction efforts aimed at putting the institution in the best position to meet the needs of today's practice and accelerated efforts in practice redesign to create the medical practice of the future. Efforts on both fronts are necessary to sustain our mission.

The longer-term answer to external financial pressures, which we will see even after economic recovery, is the continued transformation of our practice to meet the needs of tomorrow's patients, who have different expectations and want access to Mayo services in new ways.

**OPERATING PERFORMANCE** *(in Millions)*

	2008	2007	Change
Total Revenue	7,221.8	6,908.9	4.5%
Total Expenses	7,221.8	6,711.8	7.6%
Income from Current Activities	0.0	197.1	
Operating Margin	0.0%	2.9%	(2.9)p

Mayo has faced many challenges before and has worked through difficult times by remaining focused on its mission and values. By fulfilling its plans, Mayo Clinic will emerge stronger and more dynamic, better able to adapt and meet the changing needs of our patients and to provide for the well-being of our staff.

**INCOME FROM PATIENT CARE** Mayo Clinic staff cared for about 526,000 individual patients in 2008. Mayo Clinic hospitals admitted 132,000 patients during the year. Income from patient care was \$205 million in 2008 compared to \$293 million in 2007.

**INVESTING IN RESEARCH AND EDUCATION**

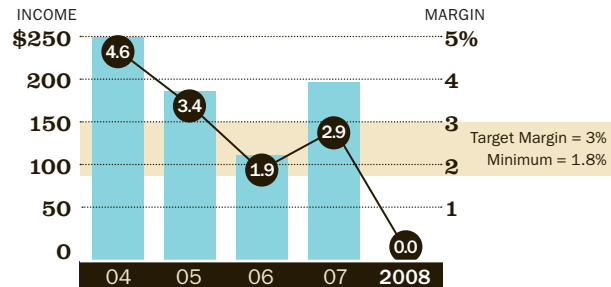
Mayo Clinic's net operating income is reinvested to advance the science of medicine and to teach the next generation of health care professionals. However, Mayo can't rely on excess funds from operations alone to completely fund education and research.

Overall funding for Mayo research and education programs was \$763 million in 2008, an increase of \$53 million over 2007. Government, foundations and industry sources provided \$372 million of the total amount. Mayo Clinic invested \$391 million in research and education in 2008, an increase of \$45 million. This includes Mayo funds and benefactor gifts.

Mayo will continue to partner with foundations, benefactors, government and industry with mutual aims to support education programs that train the next generation of medical professionals and research programs that identify tomorrow's medical breakthroughs.

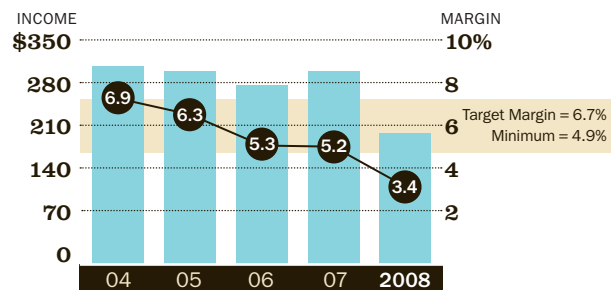
**INCOME FROM CURRENT ACTIVITIES**

(in Millions and % of revenue)



**INCOME FROM PATIENT CARE**

(in Millions and % of revenue)



**PATIENT CARE OPERATING PERFORMANCE**

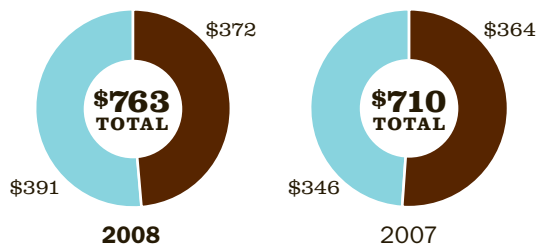
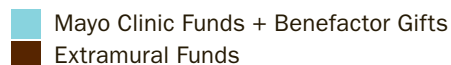
(in Millions)

	2008	2007	Change
Total Revenue	6,013.8	5,648.6	6.5%
Total Expenses	5,808.5	5,355.7	8.5%
Income from Patient Care	205.3	292.9	
Operating Margin	3.4%	5.2%	(1.8)p



## RESEARCH AND EDUCATION FUNDING

(in Millions)



**SUPPORT FROM BENEFACTORS** Gifts from benefactors totaled \$236 million in 2008 to support Mayo programs. This left \$120 million remaining to complete Mayo's five-year, \$1.25 billion Campaign for Mayo Clinic, which will be completed on Dec. 31, 2009. Support from grateful patients, foundations, corporations and other organizations is essential to Mayo Clinic's ability to carry out its mission in patient care, education and research, and to provide outstanding facilities and technology.

**ENDOWMENT** Mayo Clinic's endowment of \$1.4 billion helps provide a stable funding source for Mayo Clinic research and education programs. Mayo's goal is to increase the endowment to \$2 billion in coming years. Mayo Clinic's endowment is a critical element in providing a long-term funding base for these programs.

**DIVERSIFIED ACTIVITIES** Mayo Clinic's diversified activities include health information publishing, clinical laboratory reference services, technology commercialization, and other services and products that use Mayo Clinic's medical and scientific knowledge base. These diversified activities generated \$37 million in 2008, which is reinvested in Mayo Clinic programs in medical research and education.

## INVESTMENT PERFORMANCE *(Annualized Return)*

	ONE-YEAR	THREE-YEAR	FIVE-YEAR
General Fund	-17.9%	3.7%	7.8%
Benchmark	-23.3%	-0.2%	4.5%

**INVESTMENT PERFORMANCE** Mayo's investment results were down 18 percent, or about \$700 million, for the year. This performance is better than many in the industry but still represents a significant loss in value. Each year, a portion of the investment return is used to fund research and education programs. However, because there is significant variability of results from year to year, Mayo can't rely on strong stock market performance as a source of funding for the long term.

Mayo's pension fund dropped from being fully funded in 2007 to being about \$1.2 billion underfunded by the end of the year. Mayo remains committed to funding the pension plan, which will require a significant cash infusion over the next several years.

**CAPITAL PROJECTS** In 2008, Mayo Clinic continued to make investments in facilities and infrastructure. Capital expenditures totaled \$476 million. The organization continued a number of major projects during 2008, including opening the new hospital in Florida, the build-out of the Gonda Building in Rochester, and enhanced electronic medical records in Arizona, Florida and Mayo Health System. These major projects, along with technology, medical equipment, major renovations and projects, are fundamental in providing advanced, quality care to our patients.

**CONSOLIDATED STATEMENTS OF ACTIVITIES** YEARS ENDED DEC. 31, 2008 & 2007 (IN MILLIONS)

<b>REVENUE, GAINS, AND OTHER SUPPORT:</b>	<b>2008</b>	<b>2007</b>
Net medical service revenue	\$ 6,143.5	\$ 5,741.2
Grants and contracts	328.7	310.2
Investment return allocated to current activities	117.2	111.9
Contributions available for current activities	114.3	211.9
Premium revenue	92.8	87.3
Other	425.3	446.4
Total revenue, gains, and other support	7,221.8	6,908.9
<b>EXPENSES:</b>		
Salaries and benefits	4,627.7	4,370.8
Supplies and services	1,783.3	1,633.2
Facilities	590.6	513.2
Provision for uncollectible accounts	160.5	132.1
Finance and investment	59.7	62.5
Total expenses	7,221.8	6,711.8
<b>INCOME FROM CURRENT ACTIVITIES</b>	—	197.1
<b>NONCURRENT AND OTHER ITEMS:</b>		
Contributions not available for current activities, net	34.5	146.8
Unallocated investment return, net	(744.9)	286.0
Change in net deferred tax asset	37.6	(3.8)
Other	(3.8)	(3.4)
Total noncurrent and other items	(676.6)	425.6
<b>(DECREASE) / INCREASE IN NET ASSETS</b> (BEFORE OTHER CHANGES IN NET ASSETS)	(676.6)	622.7
<b>CHANGE IN MINIMUM PENSION LIABILITY</b>	—	6.2
<b>PENSION AND OTHER POSTRETIREMENT BENEFIT ADJUSTMENTS</b>	(1,235.3)	—
<b>(DECREASE) / INCREASE IN NET ASSETS BEFORE EFFECT OF ADOPTION OF FASB STATEMENT NUMBERS 48 AND 158</b>	(1,911.9)	628.9
<b>CUMULATIVE EFFECT OF ADOPTION OF THE PROVISIONS OF FASB STATEMENT NO. 48</b>	—	(2.2)
<b>EFFECT OF ADOPTION OF PROVISIONS OF FASB STATEMENT NO. 158</b>	(74.8)	(394.3)
<b>(DECREASE) / INCREASE IN NET ASSETS</b>	(1,986.7)	232.4
<b>NET ASSETS AT BEGINNING OF YEAR</b>	4,312.4	4,080.0
<b>NET ASSETS AT END OF YEAR</b>	\$ 2,325.7	\$ 4,312.4

## CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

YEARS ENDED DEC. 31, 2008 & 2007 (IN MILLIONS)

ASSETS	2008	2007	CHANGE
Cash and cash equivalents	\$ 42.3	\$ 51.7	\$ (9.4)
Accounts receivable for medical services, net	1,116.7	1,101.2	15.5
Investments — at market	2,737.6	3,277.9	(540.3)
Other assets	882.7	1,026.6	(143.9)
Property, plant, and equipment, net	3,553.6	3,533.1	20.5
<b>Total assets</b>	<b>\$ 8,332.9</b>	<b>\$ 8,990.5</b>	<b>\$ (657.6)</b>
<b>LIABILITIES AND NET ASSETS</b>			
Accounts payable and current liabilities	\$ 1,392.3	\$ 1,118.0	\$ 274.3
Long-term debt	1,359.9	1,450.2	(90.3)
Other long-term liabilities	3,255.0	2,109.9	1,145.1
Net assets	2,325.7	4,312.4	(1,986.7)
<b>Total liabilities and net assets</b>	<b>\$ 8,332.9</b>	<b>\$ 8,990.5</b>	<b>\$ (657.6)</b>
<b>MAYO SERVICES AND PEOPLE</b>			
<i>Measures of service</i>			
Total clinic patients*	526,000		
Hospital admissions	132,000		
Hospital days of patient care	627,000		
<i>Number of Personnel (including temporary and supplemental employees)</i>			
Staff physicians and medical scientists	3,700		
Allied health	50,100		
Residents, fellows and students	3,200		
<b>Total</b>	<b>57,000</b>		

\* Includes Rochester, Florida and Arizona locations only.

The above summary is intended to present a brief review of Mayo Clinic's financial condition and activities for 2008 compared with 2007. The Consolidated Financial Statements of Mayo Clinic for the years ended Dec. 31, 2008 and 2007 were examined by Ernst & Young LLP.

A copy of its report and Mayo Clinic's financial statement can be obtained by writing to:  
 Treasurer, Mayo Clinic  
 Rochester, MN 55905



**COMMUNITY BENEFIT SUMMARY: BENEFITS TO THOSE IN NEED AND THE BROADER COMMUNITY\***  
 YEAR ENDED DEC. 31, 2008 (ESTIMATED COSTS STATED IN MILLIONS)

<b>COST OF BENEFIT PROVIDED TO THOSE IN NEED</b>	<b>2008</b>
Charity care	\$ 69.8
Unpaid portions of Medicaid and other indigent care programs	139.5
<b>Total quantifiable benefit to those in need</b>	<b>\$ 209.3</b>

<b>COST OF BENEFIT PROVIDED TO THE BROADER COMMUNITY</b>	
Non-billed services and cash and in-kind donations	\$ 5.0
Education and Research**	390.8
<b>Total quantifiable benefit to the broader community</b>	<b>\$ 395.8</b>
<b>Total estimated cost of quantifiable community benefit</b>	<b>\$ 605.1</b>
<b>Unpaid portions of Medicare</b>	<b>\$ 840.7</b>

\* The estimated cost of benefits to those in need and the broader community were calculated in accordance with the guidelines set forth by CHA/VHA.

\*\* The estimated cost of education and research excludes externally sponsored funding that totaled \$372.1 in 2008.

**GIVING BACK TO OUR COMMUNITIES**

- The Mayo Clinic Center for Translational Science Activities joined with the Center for Minority Health at the University of Pittsburgh's Graduate School of Public Health for a program called "Take a Health Professional to the People Day." The event deploys clinical teams to inner-city Pittsburgh to deliver health information and health screenings.
- Florida State University (FSU) and Mayo Clinic signed an agreement to work as research partners in the quest to improve health care outcomes for Floridians and all Americans. The agreement calls for interaction, collaboration and the exchange of scientific and educational literature and research between joint research programs.
- Mayo Clinic Health Policy Center held listening sessions across the country to gather patients' ideas of how to transform health care in the U.S. The effort was part of *Your Voice, New Vision*, a national grassroots initiative lead by Mayo Clinic.
- The growing relationship between Mayo Clinic and Arizona State University (ASU) has resulted in a new collaborative effort: The ASU Barrett Honors College Premedical Scholars Program. This Mayo Clinic sponsored program will teach premedical students about the wide variety of interests and career opportunities available in medicine, and also encourage them to take an active role in community and humanitarian programs.

**The Mayo Clinic Board of Trustees is a 33-member group of public representatives and Mayo physicians and administrators. It has overall responsibility for the charitable, clinical practice, scientific, and educational mission and purposes of Mayo Clinic as set forth in its Articles of Incorporation and Bylaws.**

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\* Mayo Clinic was saddened to learn of the death of Dr. Grossman on April 1, 2008.

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In its earliest days, one of Mayo Clinic's founders, William J. Mayo, M.D., stated, "The best interest of the patient is the only interest to be considered." That primary value — the needs of the patient come first — has guided Mayo's practice throughout its history and at every Mayo campus.

Connecting people, ideas and processes by **integrating** multiple locations so that wherever patients are seen, they have the same experience and access to all of Mayo Clinic's resources.

Enhancing its **culture of quality, value, safety and outcomes** so that every employee contributes to superior service at affordable costs.

## Transforming the science of health care delivery

by improving and sharing what Mayo has learned for the benefit of the entire organization and all of medicine.

Organizational priorities in 2009 are aimed at ensuring that this patient focus permeates the entire organization, providing an unparalleled patient experience. Mayo Clinic will focus significant effort on:

Searching for answers for every patient through **individualized medicine** to better understand genetic differences connected to disease and to wellness, enabling Mayo to customize treatments more effectively.



**INTEGRATION** Mayo Clinic is one organization with multiple campuses. No matter where patients are seen, they should experience Mayo's model of care — the highest-quality care and personal service — and know that they have access to all of the resources of Mayo Clinic.

Inside the organization, Mayo is motivated by common goals and values, with staff at all locations dedicated to working together for our patients. Historically, Mayo Clinic has excelled at bringing together teams of specialists to diagnose and treat the most difficult medical conditions. Today, with specialists in virtually every medical specialty committed to collaboration, and connected through common goals and the latest technology, Mayo Clinic has resources unmatched by any other medical institution.

**INDIVIDUALIZED MEDICINE** Modern medicine has made great strides in linking clinical and biological data to improve our ability to predict an individual's susceptibility to disease, onset and progression of disease, and likely response to therapies.

In the coming years, even more will be possible, taking advantage of rapidly increasing understanding of our genetic makeup, and more sophisticated information systems and tools to allow Mayo to predict outcomes. By focusing on the individual's unique requirements, innovative health, wellness and care services will meet the needs of patients to keep them healthy — not just treat them when they're sick.

#### **CULTURE OF TEAMWORK AND QUALITY**

Mayo Clinic has always been synonymous with quality. As an organization, Mayo Clinic has a culture of teamwork and quality that allows it to pursue excellence in patient care, to make important discoveries and apply the latest medical knowledge, and to provide great service.

The challenge today is to build on advances in teamwork and quality to create lasting improvements, spread throughout the organization, that deliver the best outcomes, the safest medical care, and the best service. Delivering the best outcomes in the most efficient and cost-effective manner creates the best value in medical care. Building lifelong relationships through quality service enhances patient loyalty and confidence in new health care services that Mayo will offer.

**SCIENCE OF HEALTH CARE DELIVERY** Mayo Clinic is poised to meet evolving patient needs and broaden its reach in the 21st century. As the Mayo practice developed, it built on excellent care for patients with a unified patient record, advanced communications and scheduling systems, and facilities designed to support and strengthen the practice of Mayo staff.

Mayo is creating the future of patient care by continuing to apply expertise not only to episodes of care but to the systems and processes that support the delivery of care. Mayo Clinic is building on its core business to be able to offer a platform of products and services to reach patients in new ways, increasing the value of the care it delivers. Many initiatives will involve partnerships with business and industry, other health care and academic institutions, and government.

**“One miracle after another.”  
That is how Dianne McCalla  
describes her life. She has good  
reason to believe so.**



*Dianne and Gary McCalla*

During an annual checkup — as sunlight streamed through window blinds — McCalla’s physician looked intently at her face and said, “You look jaundiced.” It was a life-changing observation for the then 37-year-old McCalla.

The sunlight was a step toward a startling diagnosis. McCalla had a serious liver infection that can become chronic, leading to liver failure, liver cancer, or cirrhosis — a condition that causes permanent scarring of the liver.

McCalla’s health took this downward spiral. At the time of her diagnosis, McCalla was living in Memphis, Tenn., and staying close to home for her health care needs.

**ASTONISHING JOURNEY** McCalla’s journey since her diagnosis has been nothing short of astonishing. She developed cirrhosis of the liver, causing her liver to show signs of failure. A brother encouraged her to get an appointment at Mayo Clinic’s campus in Rochester, Minn.

“I was going to die without a new liver,” she recalls. “I had to roll the dice.” On Jan. 17, 1987, she received a liver transplant at Mayo Clinic. Just four years later, as she underwent routine liver function checks, cancer was detected in her liver. Surgeons at Mayo Clinic in Rochester removed the liver and transplanted a second one.

In 1999, the McCallas moved from Memphis to Jacksonville, Fla. Just a year earlier, Mayo Clinic’s campus in Florida established its own liver transplant program. The timing was fortuitous for McCalla, who soon learned that she had developed an artery blockage in the second liver. Her third liver transplant was done at Mayo Clinic’s campus in Florida.

With time and the course of McCalla’s health, the connection to Mayo Clinic and the Sunshine State would develop personal significance, and bring a philanthropic purpose to her life she could not have anticipated.

**EXPRESSING GRATITUDE** McCalla is now under the care of Barry Rosser, M.D., a transplant hepatologist. “Patients like Dianne have good outcomes because over the past decade we have developed greater understanding about surgical reconnection of blood vessels, better anesthesia techniques, improved wound care techniques, and immunosuppressant drugs with fewer side effects,” says Dr. Rosser.

The care McCalla received not only changed her outlook, it changed her. “These experiences have made me more grateful,” says McCalla. “God has provided love and joy through family, friends and caregivers.”

Today, McCalla is passionate about sharing her personal health triumphs and recognizing her care at Mayo over the past two decades. “Mayo saved my life three times,” says McCalla. “We’re joyful about giving. It’s an honor to know others will be helped.”

The Gary and Dianne McCalla Transplant Center in the Mayo Clinic hospital, named in the couple’s honor, recognizes their generous philanthropy and desire to share hope with others.

“We feel blessed to have this purpose in our life,” she says. “It’s our mission to pass on the hope we’ve been given. We know that the intelligence and drive of Mayo will keep it moving toward prevention of diseases. That’s the real hope for the future.” ✨

There are many ways you can help support Mayo Clinic with a tax-deductible gift. Learn how by visiting [www.mayoclinic.org/campaign/people.html](http://www.mayoclinic.org/campaign/people.html)

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*We want to hear  
from you!*

From the day Drs. Will and Charlie Mayo opened their door to patients, people have been talking about Mayo Clinic.

Today we offer a new way for Mayo patients, families, friends and staff to connect with each other and share their Mayo Clinic experiences: the Sharing Mayo Clinic Blog.

It's easy to participate in the conversation and read posts from other patients and staff at our new blog. Type *sharing.mayoclinic.org* into your Web browser, or go to *mayoclinic.org* and click on 'blogs'.



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