



Neurosciences News

A publication for those who support brain, nerve, and muscle disease research, education, and care at the University of Minnesota

Quicker treatment, better outcomes Remote consultations improve the chances for patients to receive the treatment they need in the critical moments after a stroke

Adnan Qureshi, M.D., knows the harm and sorrow that a stroke can leave behind. His mother died of a hemorrhagic stroke when she was 39 years old.

Her death fueled Qureshi's determination to improve treatment for stroke patients. Today Qureshi, a professor in the University of Minnesota Medical School's Department of Neurology, heads the University-affiliated Stroke Center. The center is a national leader in advancing clinical care and crossdisciplinary research on stroke.

Strokes injure the brain in two ways: when a clot blocks the flow of blood, or when a blood vessel bursts. In either scenario, rapid identification of the problem and quick treatment can allow the patient to recover with little permanent damage. But if too much time passes, the outcome can be far worse.

In many parts of the state where comprehensive stroke care is not readily available, access to stroke experts can mean the difference between life and death.

That's why one of the Stroke Center's many programs is focused on giving advice to physicians and helping to remotely diagnose patients during the crucial early minutes of a stroke. Emergency department doctors who call the center's all-day, every-day physician hotline can lead patients into recovery when debilitation or death might otherwise result.

"The most common question from E.R. doctors is whether to give thrombolytic therapy," which dissolves the blood clots that

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Photo by Richard Anderson



Neurologist Robert Taylor, M.D., uses telemedicine technology to consult with other doctors about whether a stroke patient might benefit from thrombolytic therapy.

Quicker treatment, better outcomes continued from cover



Photo by Richard Anderson

Stroke specialist Adnan Qureshi, M.D., envisions a day when stroke diagnosis can start in an ambulance—shaving off important minutes before treatment begins.

produce many strokes and can help to restore blood flow before disabling brain damage occurs, says Robert Taylor, M.D., an assistant professor in the University's Departments of Neurology, Neurosurgery, and Radiology. But the medication also carries a risk of causing serious bleeding in the brain.

In crucial situations like these, Taylor says, the Stroke Center's consulting physicians can recommend whether they think the patient will benefit from thrombolytic therapy.

Taylor believes the hotline is especially valuable for emergency department doctors at small hospitals, some of whom are family practice physicians with limited experience with stroke patients during the early hours of treatment.

"They feel more comfortable getting this kind of consultation because of the theoretical risks of the treatment," Taylor says.

Physicians at Wadena Medical Center in Wadena, Minnesota, have an even greater level of access to the Stroke Center. Using a telemedicine video link, patients and their doctors in Wadena are connected directly with Stroke Center doctors. The Stroke Center consultant can lead patients through a neurological exam that allows doctors to evaluate the patient's symptoms and responses based on the National Institutes of Health's Stroke Scale, which leads to an assessment of the stroke and treatments if applicable. The Stroke Center is looking for funding to expand the use of this telemedicine technology to other medical centers around the state.

In the future, Qureshi believes that more hospitals in Minnesota will be able to give stroke patients the care they need.

"We're emphasizing making many hospitals stroke-ready, which means enabling them to

stabilize patients, monitor them, make the diagnosis of a stroke, and get brain imaging that confirms the diagnosis," he says.

He also hopes that emergency medical services (EMS) crews, such as those working in ambulances, one day may be able to help get that process started—even before patients arrive at the hospital. He predicts that EMS personnel equipped with CT scanners in their vehicles will be trained to offer early stroke diagnosis, shaving off important minutes before the start of treatment.

"In the future, I foresee a broader access to an ever-higher standard of care," Qureshi says. "We must recognize that if these services are not reaching every person with a stroke in this country, the benefits of new therapies will be definitely limited. We need to keep working on the way stroke care is organized along with improving our interventional treatments."

Did you know?

- Stroke is the third most common cause of death in Minnesota.
- In 2008, more than 86,000 adults in Minnesota reported ever having had a stroke.
- In 2007 alone, Minnesotans were hospitalized about 11,500 times for acute stroke events.
- Minnesotans incurred almost \$318 million in charges for stroke-related inpatient hospitalizations that same year.

Source: Minnesota Department of Health

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to receive the latest news about brain, nerve, and muscle diseases from the University of Minnesota.

Degree of obesity raises risk of stroke, regardless of gender or race

The more obese people are, the higher their risk of stroke—regardless of race, gender, and how obesity is measured, according to a study published in *Stroke: Journal of the American Heart Association*.

Lead author and University of Minnesota visiting associate professor Hiroshi Yatsuya, M.D., Ph.D., and colleagues evaluated the health of 13,549 middle-aged black and white men and women in four American communities (including one in Minnesota) from 1987 through 2005 as part of the Atherosclerosis Risk in Communities Study, sponsored by the National Heart, Lung, and Blood Institute.

At the start of the study, participants were free of cancer and cardiovascular disease. During the follow-up period, 598 ischemic strokes—which are caused by blockages of blood flow to the brain—occurred.

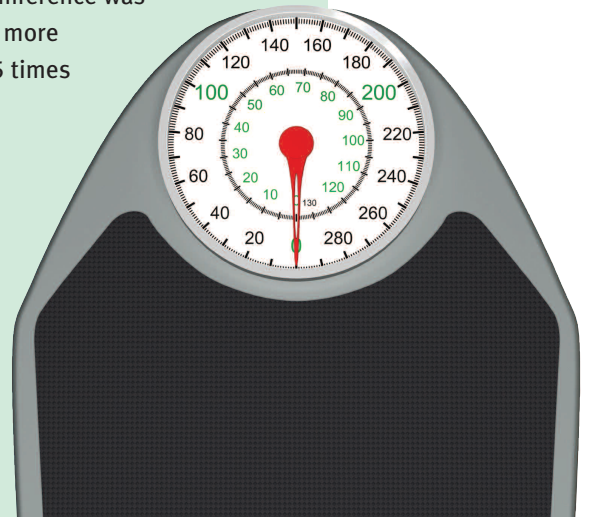
Yatsuya and colleagues examined stroke rates in groups of people based on different indicators of obesity, including body mass index (BMI), waist circumference, and waist-to-hip ratio. But any way they measured overweight, they reached a similar conclusion.

People who had the highest BMIs were 1.43 to 2.12 times more likely to have a stroke compared with people with the lowest BMIs, varying modestly by race and sex. When waist circumference was used as a measure of obesity, the most overweight group was 1.65 to 3.19 times more likely to suffer a stroke, and the highest waist-to-hip ratio group was 1.69 to 2.55 times more likely to have a stroke.

Because more obese people tended to have higher blood pressure and more cases of diabetes, Yatsuya's group further examined the relationship between obesity and ischemic stroke by statistically adjusting for these factors.

"That significantly weakened the associations, suggesting these major risk factors explain much of the obesity-stroke association," Yatsuya says.

The study results re-emphasize the need to prevent obesity in general, he says. But a more controlled study such as a clinical trial would be needed to determine whether obesity prevention or control could actually decrease stroke incidence, he adds.



Leave a legacy for future generations

Your annual gifts to the Minnesota Medical Foundation at the University of Minnesota make a real difference for people suffering from brain, nerve, and muscle disorders.

You can continue to make annual gifts after your lifetime as well by including the Minnesota Medical Foundation in your estate plans. The income generated from your endowed gift will allow you to continue to help advance world-class medical research, education, and care at the University.

For example, if you're making an annual gift of \$500 to brain-related research, education, or

care today, an endowed gift of \$10,500 in your estate plan would provide the same amount of support every year after your lifetime in perpetuity.

Endowed gifts can be made through a bequest in your will or living trust or by naming the Minnesota Medical Foundation as a beneficiary of your retirement plan or life insurance policy.

For sample bequest language or to speak to a gift planning officer, contact the Minnesota Medical Foundation's Office of Gift Planning at 612-625-1440 or 800-922-1663, or find more information at www.mmf.umn.edu/giftplanning.

Physicians team up to preserve hearing in people who have acoustic neuromas

Neurosurgeon Stephen Haines, M.D., and otolaryngologist Samuel Levine, M.D., work together on a procedure that requires expertise from both specialties.



Photo by Richard Anderson

Is brain surgery a team sport? Two University of Minnesota faculty members are making a good case that it is.

They're joining forces to treat acoustic neuromas—small tumors that grow on nerves that connect the inner ear with the brain—using new technology to preserve the patient's hearing.

Acoustic neuromas typically are noncancerous and slow-growing tumors, according to the National Institutes of Health. But as the tumors do grow, they can press on nerves that affect hearing and balance.

They're often removed through surgery, a technique that has improved in effectiveness with the advent of brain imaging techniques. Even so, the cochlear nerve, which is responsible for

hearing, can easily be damaged in the surgery, especially for those who have larger tumors, resulting in deafness.

But Stephen Haines, M.D., head of the University of Minnesota Medical School's Department of Neurosurgery, and Samuel Levine, M.D., a professor in the Departments of Otolaryngology and Neurosurgery, are working together to produce better outcomes for patients by using advanced imaging and monitoring techniques to keep patients' hearing intact.

Surgery for acoustic neuromas requires the displacement of a bony canal, sometimes less than a centimeter long, running from the inner ear to the brainstem. During this procedure, imaging equipment helps Haines and Levine see as they perform the delicate work.

And as they remove the tumors, another technological tool offers assistance: equipment that monitors auditory brainstem response, the electrical signals neurons in the brain fire when detecting sound.

If the response remains in the normal range, the physicians know that the surgery has not affected hearing, Levine says. If necessary, they can adjust their approach to keep the cochlear nerve undamaged.

In this team procedure at University of Minnesota Medical Center, Fairview, Levine takes charge of accessing the tumors through the ear, and Haines handles their removal.

Levine compares their collaboration to the teamwork required by marriage, and Haines agrees.

"Working together like this is a matter of personal interaction and compromise, and we've learned a lot from each other," Haines says. "This technique really requires the expertise of both specialties. It won't work if you're stubborn about only using the approaches you learned during your training."

Women band together to support a University study on health of the aging brain

What makes us age? What happens when women, in particular, grow older?

Nobody yet knows which combination of health factors contributes to the rate, variation, and quality of aging, but acquiring that elusive information could allow us to foresee the path we'll follow as we age and perhaps change that path for the better.

Apostolos P. Georgopoulos, M.D., Ph.D., Regents Professor in the University of Minnesota Medical School's Department of Neuroscience, is leading a study that promises to discover the ingredients in brain structure and function, as well as genetics, that produce healthy aging. The groundbreaking study, called the Minnesota Women's Healthy Aging Project, involves five other University investigators and is believed to be unlike any study of the aging process previously or currently under way.

The first phase of the study began earlier this year. One hundred healthy women between ages 65 and 99 underwent a series of tests designed to measure their cognitive and language abilities, with the ultimate goal of determining markers that establish the timeline of brain aging.

The tests included MRIs of the brain to assess structure, magnetoencephalography images to determine functionality, the Mini-Mental State Examination (a standardized test used to determine cognitive abilities), speech and language fluency evaluations, and a DNA analysis.

The study's funding source is as original as its scope and research methods.

To move the study ahead, the University and the Veterans Affairs Medical Center in Minneapolis contributed access to equipment, space, support staff, and faculty researchers' time. That left \$160,000 needed to launch the project's initial phase.

Georgopoulos asked Sally Kling of Minneapolis, whom he had met a few years prior, to organize a fundraising effort. Kling was interested in the project because of a



Photo by Richard Anderson

history of Alzheimer's disease in the women in her family, and Georgopoulos knew Kling was an experienced fundraiser.

Soon Kling had drafted Anita Kunin to help. Then Kunin brought in Barbara Forster, and the three of them together enlisted Karen Bachman and Emily Anne Tuttle to help as well.

"We did it by thinking outside of the traditional fundraising box," Kling says. "There were no dinners, lunches, or galas."

Instead, the fundraisers hosted small gatherings of women where Georgopoulos explained the study and the need for support. They also sent letters to 174 friends and colleagues describing the urgency of the project and asking for contributions large and small.

The fundraising effort exceeded its goal, raising more than \$164,000.

"It was extraordinary to have a researcher of Dr. Georgopoulos's stature looking for money privately and [to have] a previously unformed group of women willing to give support based on meetings or letters from women they knew," Kling says.

And it really drove home the impact that a small group of motivated people *can* make.

"We [had] women responding to women on behalf of women," Kling says. "I am very proud of our results."

Anita Kunin, Barbara Forster, and Sally Kling led a fundraising effort for the Minnesota Women's Healthy Aging Project.

Creating a 'medical home' for people with ADHD



When children are diagnosed with attention deficit hyperactivity disorder (ADHD), they often receive only one part of their recommended therapy—the medication component. But alone, that’s not the most effective treatment, says University of Minnesota psychiatry professor Gerald August, Ph.D.

The recommended treatment plan—and especially the behavioral therapy component—often gets left behind because families don’t have the time or resources to apply it, he says.

But complete care is important. ADHD isn’t just a childhood disorder. Children don’t always “grow out of” ADHD, which is characterized by inattention, hyperactivity, and impulsivity. When it

continues into adulthood, the disorder can affect a person’s ability to stay organized or stick with a project, job, or relationship, according to the National Institute of Mental Health.

Some people with ADHD also may experience anxiety, depression, and learning disabilities.

“ADHD is a lifetime disorder,” August says. “With that recognition, we have the understanding that we probably need to rethink the way we are delivering services.”

That’s why he and a group of colleagues are developing a “medical home” care model to improve treatment for children and adolescents who have ADHD. Currently, most kids with ADHD are treated by pediatricians or family physicians, who simply don’t have the time or resources to provide the comprehensive care these patients need, August says.

A “medical home” offers a team approach to care, coordinating the therapies a patient may receive from several medical and behavioral specialists as well as at school and at home. Today the model is used primarily for people suffering from chronic conditions such as asthma, autism, and diabetes.

But August and his colleagues are working with the West Metro Pediatric Behavioral Health Collaborative, which includes a network of pediatric clinics in Twin Cities suburbs, to make their vision a reality. The program they’ve created includes evidence-based, culturally sensitive, family-centered principles of care.

Central to the program are a health care coordinator—a person who works with families, assists physicians, and collaborates with educators to collect assessment and treatment data—and a continuous care program to make sure no one falls between the cracks. The program also will incorporate a web-based tool to foster better communication among families and care providers as well as a fast-track referral system to behavioral health specialists as needed.

August and his partners are waiting to hear whether they’ll receive grants they’ve applied for to help get the program off the ground. They plan to start implementing it in December—with or without grant funding—but they’re hoping that philanthropy can help sustain the program for the months and years to come.

“Without funding for the long-term future, we probably won’t get very far,” August says.

To learn more about how you can support this program, contact Shannon Birge Laudon of the Minnesota Medical Foundation at 612-626-3186 or s.birge@mmf.umn.edu.



the LINE UP

News from the Bob Allison Ataxia Research Center

New name for Medical Biosciences Building honors longtime U supporters

In recognition of a lifetime of support, the University of Minnesota in June named the newest building in its Biomedical Discovery District the Winston and Maxine Wallin Medical Biosciences Building.

In addition to their generous financial support over the years, the Wallins—both University alumni—have contributed their time and talents to the advancement of higher education, particularly in the health sciences.

The building is part of the growing Biomedical Discovery District, a state-of-the-art research park located on the University's East Bank campus. When complete, this multiphase project will provide more than 700,000 square feet of space (larger than 12 football fields) for 1,000 investigators to collaborate on research leading to lifesaving discoveries.



Maxine and Winston Wallin

The Winston and Maxine Wallin Medical Biosciences Building houses investigators working in several areas of neurosciences research, including those involved with the Bob Allison Ataxia Research Center and the N. Bud Grossman Center for Memory Research and Care.

A new milestone

The ninth annual Karen's Hope Ataxia Benefit, held June 14 at the Oak Marsh Golf Course in Oakdale, Minnesota, raised \$35,200 for the Bob Allison Ataxia Research Center at the University of Minnesota. Longtime supporter Connie Bakken contributed an additional \$25,000 through the Whitney ARCEE Foundation, bringing the event's nine-year total to more than \$500,000.

Learn more about the event at www.karens-hope.org.



Mark your calendars for the sixth annual Diamond Awards

Thursday, January 27, 2011, at Target Field

Don't miss Minnesota's premier baseball charity event and the chance to celebrate the Twins' inaugural season in their new home!

Join the 2010 division champion Minnesota Twins at Diamond Awards to celebrate a riveting season and honor players for their outstanding performances. Event highlights include a silent auction with rare baseball memorabilia and a televised awards ceremony.

Proceeds support the University of Minnesota's innovative research and patient care in ataxia, muscular dystrophy, multiple sclerosis, Parkinson's disease, and ALS (Lou Gehrig's disease).

To register or for more information, visit www.minnesotadiamondawards.org.

**U collaborates
on \$26 million
study on risks
for Alzheimer's
and cognitive
decline**

The University of Minnesota School of Public Health, the University of Mississippi Medical Center, and three other collaborating academic medical centers have received \$26 million from the National Institutes of Health to identify risk factors for Alzheimer's disease and related forms of cognitive decline.

The new funding will pay for the Atherosclerosis Risk in Communities (ARIC) Neurocognitive Study, a comprehensive examination of thousands of patients that will include detailed neurocognitive testing and brain imaging. The project builds on the influential ARIC study, a large-scale investigation of the risk factors for heart disease and stroke.

Using the wealth of information collected during ARIC's 20-plus years, the study is expected to further illuminate causes of dementia, giving researchers a window into early physiological changes that eventually

culminate in the development of Alzheimer's.

Of particular interest is the role that vascular risk factors in middle age—including high blood pressure, diabetes, and lifestyle—play in the development of Alzheimer's and cognitive decline later in life.

Researchers believe Alzheimer's disease likely isn't caused by a single factor, but rather by a complex process involving multiple factors interacting and accumulating over decades.

Previous findings have pointed to the importance of vascular risk factors in predicting decline in cognitive functions such as memory and processing speed.

As a primary site, the University will receive \$4.3 million for its portion of the study. Researchers here will work with the University of Mississippi Medical Center as well as Wake Forest University, Johns Hopkins University, and the University of North Carolina at Chapel Hill.

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Nicole Endres, *Editor*
Jack El-Hai, *Writer*
Lisa Haines, *juju, Design*

For more information, please contact:
Catherine McGlinch
Director of Development
612-626-5456 (direct)
800-922-1663 (toll free)
c.mcglinch@mmf.umn.edu

www.mmf.umn.edu/neuro

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