



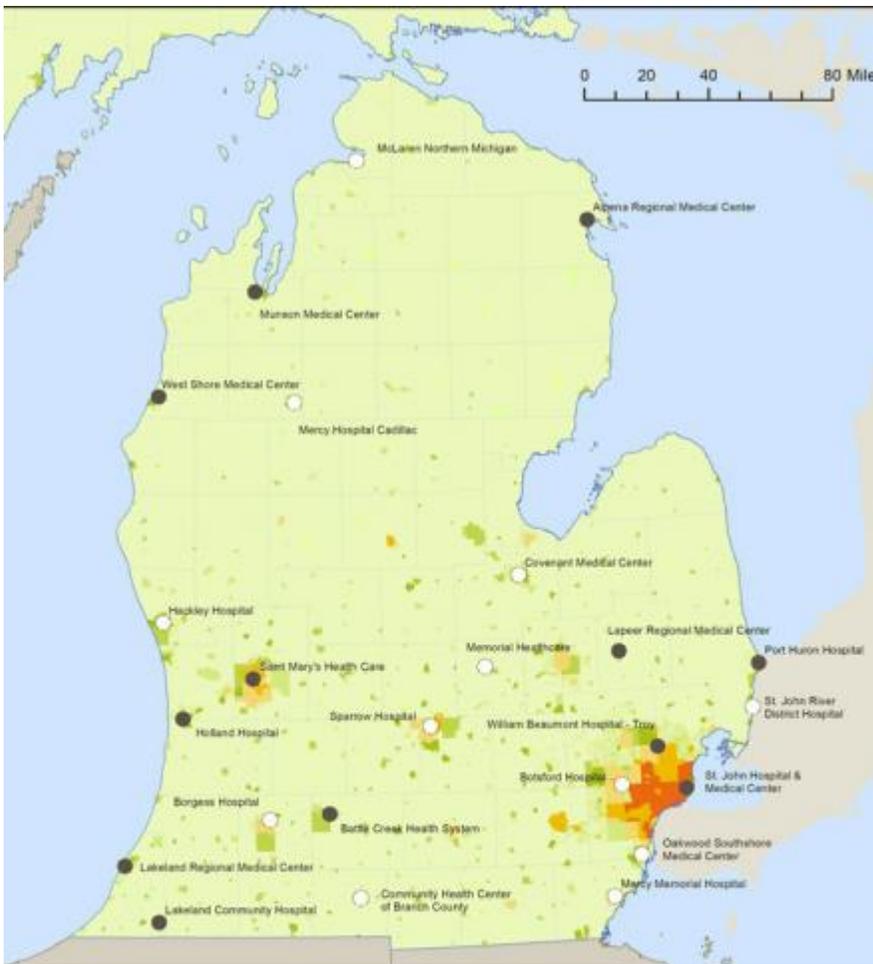
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Media Contact: [Kara Gavin \(mailto: kegavin@med.umich.edu\)](mailto:kegavin@med.umich.edu) 734-764-2220

Media Contact: [Shantell Kirkendoll \(mailto: smkirk@umich.edu\)](mailto:smkirk@umich.edu) 734-764-2220

Better stroke care, everywhere: NIH-funded study boosts local hospitals' clotbuster use

24-hospital trial shows inexpensive education effort increases safe tPA use



These 24 community hospitals participated in the INSTINCT stroke trial. Those in gray were randomly chosen to receive U-M training and 24/7 support, those in white were not. The use of tPA rose much more at hospitals that got the intervention.

ANN ARBOR, Mich. — From the moment a stroke occurs, patients must race against the clock to get treatment that can prevent lasting damage. Now, a new study shows the promise – and the challenges – of getting them state-of-the-art treatment safely at their local hospital, saving precious minutes.

The results come from an effort that tested methods to improve delivery of a time-sensitive, clot-busting drug in stroke patients at 24 community hospitals across Michigan. To date, clot-busting treatment has been mostly used at larger hospitals.

The research effort was coordinated by members of the University of Michigan Health System’s [Department of Emergency Medicine](http://medicine.umich.edu/dept/emergency-medicine) (<http://medicine.umich.edu/dept/emergency-medicine>), [Department of Neurology](http://www.med.umich.edu/neurology/) (<http://www.med.umich.edu/neurology/>) and [Stroke Program](http://uofmhealth.org/medical-services/stroke) (<http://uofmhealth.org/medical-services/stroke>), which offered half the hospitals education and round-the-clock treatment assistance by phone. The study was funded by the [National Institute of Neurological Disorders and Stroke](http://www.ninds.nih.gov) (<http://www.ninds.nih.gov>) at the [National Institutes of Health](http://www.nih.gov) (<http://www.nih.gov>).

By the end of the study, the community hospitals across Michigan that had the U-M experts as the “sixth man” on their teams did better at delivering the drug called tPA to eligible patients than those that didn’t.

The findings of the randomized controlled trial are published in [The Lancet Neurology](http://www.thelancet.com/journals/laneur/issue/current) (<http://www.thelancet.com/journals/laneur/issue/current>). They show that community hospitals can indeed improve patients’ chances of getting tPA in the first few hours of a stroke, without increased risk of dangerous bleeding.

Data from 22 of the hospitals show that tPA use more than doubled in the 11 hospitals that were randomly chosen to get the extra help, versus a smaller increase in the 11 that didn’t. Some hospitals even surpassed national targets for tPA use that large stroke centers don’t always reach – a true game-changing performance.

The study findings were complicated by the fact that one of the hospitals enrolled in the trial became an academic stroke center after starting the study. When it and its matched hospital are excluded from the analysis, the remaining 22 hospitals showed enough of an impact from the educational effort to be statistically significant – a 105 percent increased use of tPA over baseline. Across the U.S., less than 2 percent of stroke patients receive tPA – when more than 11 percent could – largely because of the time limits on its use and delays in getting patients to a hospital. That’s why it’s important for community hospitals to offer it.

The investigation, called [INSTINCT for INcreasing Stroke Treatment through INterventional Change Tactics](http://medicine.umich.edu/dept/emergency-medicine/research-major-research-programs/instinct-trial) (<http://medicine.umich.edu/dept/emergency-medicine/research-major-research-programs/instinct-trial>), demonstrates that tPA can be

Participating Hospitals

Alpena Regional Medical Center
Battle Creek Health System
Borgess Medical Center
Botsford Hospital
Community Health Center of Branch County
Covenant Healthcare
Holland Hospital
Lakeland Community Hospital
Lakeland Regional Medical Center
Lapeer Regional Medical Center
Memorial Healthcare
Mercy Health Partners, Hackley Campus
Mercy Hospital Cadillac
Mercy Memorial Hospital
Munson Medical Center
Northern Michigan Hospital
Oakwood Southshore Medical Center
Port Huron Hospital
Saint Mary’s Health Care

used safely and appropriately in the community hospital setting – and that more work needs to be done to expand public access to the only treatment approved by the U.S. Food and Drug Administration to reverse the effects of stroke. While improvement at the target community hospitals that got the education was statistically significant, it was not as large as hoped for. But the findings suggest that relatively low-cost and low-tech interventions can improve local stroke care.

Sparrow Hospital and Health System
St. John Hospital and Medical Center
St. John River District Hospital
West Shore Medical Center
William Beaumont Hospital-Troy

Lead author [Phillip Scott, M.D. \(http://uofmhealth.org/profile/908/phillip-alton-scott-md\)](http://uofmhealth.org/profile/908/phillip-alton-scott-md), a U-M emergency physician and principal investigator of the trial, likens the results to the performance of teams from smaller athletic conferences that beat larger, more celebrated teams, to reach the final stages of the annual NCAA college basketball tournament.

“This study suggests that community hospitals can evaluate and treat enough emergency stroke patients to keep their teams’ treatment skills sharp, but are of a size that creates rapid lines of communication and stable physician and nurse teams. This may facilitate rapid, safe stroke diagnosis and care,” says Scott, an associate professor of emergency medicine at the U-M Medical School and member of the [U-M Institute for Healthcare Policy and Innovation \(http://ihpi.umich.edu\)](http://ihpi.umich.edu). “Four of the hospitals that received the educational intervention achieved tPA use rates of 5 to 8 percent of all stroke patients, compared to only one of the control hospitals. That’s a rate many large medical centers strive to reach.”

“This study, while finding only modest improvements on average, provides encouraging evidence that intensive professional education at community hospitals has the potential to improve the use of tPA in acute stroke care,” said Scott Janis, Ph.D., program director at the NINDS. “Importantly, it also lays the groundwork for future strategies that should be explored to develop evidence-based interventions that would improve patient access to this proven therapy following stroke.”

How it was done, and more about the results:

“We essentially saw a doubling of tPA usage, using standard technologies for education and support. Importantly, the increase was achieved safely.”
- Phillip Scott, M.D., INSTINCT trial leader

The study started by collecting baseline data on stroke treatment from 2005 and 2006 at all the hospitals. After the sites were randomized, the U-M team offered continuing medical education classes at the hospitals, workshops at U-M, and other support, including 24-hour phone consultation availability, to the hospitals chosen to receive the intervention.

All the hospitals were in the lower peninsula of Michigan, and were chosen at random from among hospitals with at least 100 stroke discharges per year. All hospitals that participated stayed in the trial until data collection ended in 2010. Hospitals could hold primary stroke center designation, as granted by the Joint Commission, but could not be tertiary academic comprehensive stroke centers.

In all, 188 tPA treatments occurred among 15,065 stroke patients during the baseline period, and 557 treatments occurred among 25,758 stroke patients from 2007 to 2010. The authors note that tPA use at hospitals nationwide rose somewhat during the study period, due to factors such as insurance reimbursement and new data on tPA's effectiveness at preventing disability.

"We essentially saw a doubling of tPA usage, using standard technologies for education and support. Importantly, the increase was achieved safely," he says. "This shows we can translate the knowledge of effective stroke treatment into a community setting." The size of the study, with 557 stroke patients treated after intervention began, makes it one of the largest tPA studies in the world.

More about stroke treatment:

The use of tPA in ischemic stroke has grown around the world in the last decade, but many patients who could get the drug still do not. The "treatment window" for tPA has been seen as three hours from the onset of stroke symptoms, though recent studies suggest patients can see benefit even four and a half hours out. The importance of early treatment, however, cannot be overstated, as patients treated earlier have greater benefits and the drug is not currently FDA-approved for use beyond three hours.

Considering that most stroke sufferers wait more than an hour after symptoms start before they seek help, and that travel time to a tPA-providing hospital is around 30 minutes, that leaves hospitals about an hour to do medical imaging, make a firm diagnosis and initiate tPA treatment.

Patients must then be monitored to check for brain bleeding, and to assess the impact of their stroke. To reliably accomplish this, a system for the care of acute stroke patients must already be in place when a patient arrives at the emergency department.

Patients who don't reach a location where they can receive standard tPA treatment in time can still potentially be treated with advanced catheter-based clot removal treatment at a major referral hospital such as U-M. These advanced therapies have a longer time window for treatment, but have not been proven more effective than early standard treatment. The Stroke Program at U-M is participating in multiple trials to improve advanced stroke treatment.

Additional authors: William Meurer, M.D., Shirley Frederiksen, M.S., and Robert Silbergleit, M.D. of U-M Emergency Medicine; John Kalbfleisch, Ph.D., Zhenzhen Xu, Ph.D. and Mary Haan, DrPH of the U-M School of Public Health; and Lewis B Morgenstern, M.D., of U-M Neurology. Morgenstern directs, and Scott, Meurer, Frederiksen and Silbergleit are members of, the U-M Stroke Program.

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Additional media contacts

Staci Chroninger
Alpena General
(989) 356-7504
[schroninger@agh.org \(mailto:schroninger@agh.org\)](mailto:schroninger@agh.org)

Julie Stratos
Community Health Center of Branch County
(517) 279-5395
[Julies@chcbc.com \(mailto:Julies@chcbc.com\)](mailto:Julies@chcbc.com)

Dale Killingbeck
Munson Healthcare
[dkillingbeck@mhc.net \(mailto:dkillingbeck@mhc.net\)](mailto:dkillingbeck@mhc.net)
(231) 935-3393

Peter G. Phelps
Bronson Battle Creek
[PhelpsP@bronsonhg.org \(mailto:PhelpsP@bronsonhg.org\)](mailto:PhelpsP@bronsonhg.org)
(269) 245-8131

Beth Montalvo and Lynn Anderson
Botsford Hospital
(248) 442-7994
[bmontalvo@botsford.org \(mailto:bmontalvo@botsford.org\)](mailto:bmontalvo@botsford.org), landerson@botsford.org
 [\(mailto:landerson@botsford.org\)](mailto:landerson@botsford.org)

Eric Baldwin
McLaren Northern Michigan
(231) 487.4293
[ebaldwin@northernhealth.org \(mailto:ebaldwin@northernhealth.org\)](mailto:ebaldwin@northernhealth.org)

Tim Breed
Holland Hospital
[tbreed@hollandhospital.org \(mailto:tbreed@hollandhospital.org\)](mailto:tbreed@hollandhospital.org)
(616) 394-3590

Laura Bailey
Lakeland HealthCare
(269) 927.5123
[lbailey@lakelandregional.org \(mailto:lbailey@lakelandregional.org\)](mailto:lbailey@lakelandregional.org)

Shannon Smith
Mercy Hospital Cadillac
(231) 876-7326
[smithsle@trinity-health.org \(mailto:smithsle@trinity-health.org\)](mailto:smithsle@trinity-health.org)

Marian Emr
NINDS
(301) 496-5924
[me20t@nih.gov \(mailto:me20t@nih.gov\)](mailto:me20t@nih.gov)

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