



Connected Care Teams at Metro Health – University of Michigan Health Save Time, Brain Cells, and Lives

Comprehensive Stroke Center Streamlines Clinical Communication and Physician Consults and Reduces the Loss of Brain Cells

Every minute in which a stroke is untreated, the average patient loses 1.9 million brain cells. Each hour in which treatment fails to occur, the brain loses as many neurons as it does in nearly four years of normal aging¹.

Metro Health, an affiliate of University of Michigan Health, reduced stroke treatment door-to-needle time from 53 minutes to 28 minutes, saving each stroke patient roughly 48 million brain cells and greatly improving the probability of surviving a stroke without major disabilities. They accomplished this by changing the way teams communicate in support of care delivery for stroke patients.

Metro Health has been a Primary Stroke Center since 2005. It is also a Level II Trauma Center with Stage 7 Accreditation from HIMSS Analytics and is a certified Comprehensive Stroke Center. In October 2018, the hospital's neuroscience team set out on a project to further improve the hospital's stroke care program. The goal was to identify and reduce delays in stroke care delivery.

“We wanted to make sure our patients receive the fastest, highest quality care, because every moment that passes without treatment is the loss of someone’s brain cells, which directly impacts their quality of life,” Dillon Fassett, Process Improvement Coordinator of the Comprehensive Stroke Center at Metro Health.

The neuroscience team kicked off the project and evaluated process improvement approaches and clinical decision support tools. Process improvement experts analyzed workflows and engineered workflow enhancements that included electronic health record alerts.

The team quickly realized the Stroke Center needed a communication solution to help minimize delays in patient care delivery and to connect specialty physicians, emergency medical services (EMS), and people across departments such as neurology, radiology, nursing, laboratory, and pharmacy. They knew a unified communication solution would allow the entire stroke care team to communicate and prepare for a stroke patient before an ambulance even arrives at the hospital's emergency department (ED).

Physicians, IT leaders, and external EMS crews evaluated the Vocera® Platform and decided it was the best communication solution for their needs. They favored it because they needed a solution that would enable care teams to communicate instantly in critical situations. They also needed a solution that would connect all the people and information needed to deliver patient care – regardless of their location. For end-user communication the Stroke Center deployed a combination of hands-free Vocera Badges and the Vocera smartphone app, allowing users to choose the mobile device best suited to their workflow.

Establishing Care Plans Before Stroke Patients Arrive

When a stroke patient is being rushed via ambulance to Metro Health, paramedics send a pre-arrival notification to members of the hospital's stroke team using the secure Vocera smartphone app. The notification includes contextual patient information such as name, age, medical record number, and time last known well – a patient's time last known well indicates how long the patient was last known to be without signs and symptoms of the current stroke. Before the ambulance even arrives at the ED, the right care team members have already been activated and the right technologies and life-saving drugs are readily available.



“Vocera technology has opened up extensive opportunities for us to innovate. Our physicians were very invested in the implementation of the Vocera Platform and defining better workflows that made sense to physicians and would help them to do their jobs.”

Thomas Fantin
Vice President of
Information Technology
Metro Health

“Because we can communicate about a patient and begin a treatment plan in advance of their arrival using Vocera technology, we don't waste a second once a patient arrives to our facility. In stroke patient care, time is everything because the longer you wait to treat a stroke, the more damage is done.”

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“The moment our patient hits the ED doors, we are ready to intervene,” said Fassett.

Being able to send and receive notifications with patient context, particularly time last known well, has been a critically important addition to the Stroke Center. Knowing this information prior to a stroke patient’s arrival gives the hospital’s Advanced Practice Providers (APPs) a chance to proactively prepare the appropriate medication and treatment plan. For example, if a patient has a time last known well of four and a half hours or less, they are eligible for a tPA alteplase clot-busting medication. If a patient has a time last known well within 24 hours, they can receive a thrombectomy. If a patient has a time last known well of five hours, the APP team can automatically rule out tPA eligibility and start considering a thrombectomy.

“Because we can communicate about a patient and begin a treatment plan in advance of their arrival using Vocera technology, we don’t waste a second once a patient arrives to our facility,” Fassett said. “In stroke patient care, time is everything because the longer you wait to treat a stroke, the more damage is done.”

Once the patient arrives to the ED, another notification is sent via the Vocera Platform to the entire stroke care team to inform them that the patient is onsite. If a bleed or large vessel occlusion requiring intervention is discovered after the patient goes through imaging and radiology, another notification is delivered to the surgical or near-infrared care team so they can prepare for the appropriate procedure.

“We use Vocera technology to notify care teams quickly and move the patient in real time,” said Fassett. “When our radiologists are in the lab looking at an image, they send a notification to our stroke care team with critical details about the case. Vocera technology enables our team to intervene the moment our radiologists uncover specifics about the patient’s stroke.”

Throughout the entire patient journey, nurses, advanced practitioners, neurologists, interventional radiologists, pharmacists, and other care team members can collaborate seamlessly inside and outside the hospital using Vocera technology.

“The Vocera Platform has made an impact on every single stroke patient we’ve treated,” Fassett said. “Our door-to-needle time has decreased by 47%, which translates to saving nearly 50 million brain cells. That reduction alone demonstrates the positive benefits that Vocera technology, along with other technologies, has provided us and our patients. We’re giving patients a much better chance of survival. Our patients now have the opportunity for independent ambulation and being discharged to their home rather than to a sub-acute rehab facility.”

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Streamlining Physician Consults, Improving Outcomes

Part of Metro Health's stroke care workflow is a process that goes through M-LINE, University of Michigan's patient transfer coordination and physician consultation service. Outside hospitals that need to transfer stroke patients to Metro Health for advanced intervention call M-LINE. Once the call is received by an M-LINE representative, a customized communication template is used to send case information to Metro Health's neuro-interventional radiologists and on-call neurologists on their preferred communication devices. Then, the neuro-interventional radiologists and on-call neurologists can call back the right person at the outside hospital directly through the Vocera Platform to learn additional details about the incoming patient.

"Vocera technology has opened up extensive opportunities for us to innovate," said Thomas Fantin, Vice President of Information Technology at Metro Health. "Our physicians were very invested in the implementation of the Vocera Platform and defining better workflows that made sense to physicians and would help them to do their jobs."

While Metro Health physicians were onboard with having a better way to communicate, it was critical to engage them before implementing the new solution to ensure use and adoption. Physicians were deeply involved in the neuroscience team's process for evaluating and implementing the communication solution because they wanted to make sure the clinical workflows and on-call scheduling worked well.

"The clinical collaboration that the Vocera Platform enables is unlike any other communication system," said Fassett. "I regularly see providers – some who are not even on-call – consulting on stroke patient alerts with suggestions for treatment plans through the Vocera Platform."

Additionally, Metro Health is using Vocera technology to collaborate with their parent health system, University of Michigan Health, for tele-critical care. Clinicians at Metro Health use the Vocera Platform to send notifications to physicians at University of Michigan Health when telemedicine consults are needed for patients in the ED and intensive care unit. Through reading the text message, which may include images, vital signs, and other contextual information, physicians can conduct a pre-assessment on the patient before the video consultation even happens.

"We're grateful to have a communication tool like the Vocera Platform. It's made us more efficient and more connected," Fassett said. "We can share information securely and quickly so we can save patient lives, which is why we're all here."



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Stats at a Glance*

46%

improvement in median Door-to-Groin time; decreased from 114 minutes to 62 minutes

15%

improvement in Door-to-Recanalization time; decreased from 148 to 125 minutes

47%

improvement in Door-to-Needle time; decrease from 53 minutes to 28 minutes

*Saver, Jeffery L. "Time Is Brain—Quantified." American Heart Association, 5 Dec. 2005, www.ahajournals.org/doi/full/10.1161/01.str.0000196957.55928.ab.



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