Stroke team travels to patients, resulting in faster treatment and better patient outcomes
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In a pilot program in New York City, instead of transferring stroke patients to a specialized stroke center, a mobile interventional stroke team (MIST) traveled to the patient to perform emergency stroke surgery resulting in significantly less disability for patients three months after the stroke, compared to patients who lost valuable time in the transfer to a higher level stroke center, according to new research published today in *Stroke*.

In this study, stroke specialists at Mount Sinai Health System in New York City developed a model called MIST to bring a surgical procedure known as endovascular thrombectomy to the patient. The MIST team was staffed with a neuro-interventionalist, a fellow in training or a physician assistant, and a radiologic technologist. The team traveled to the location of the patient to perform the endovascular thrombectomy procedure.

Researchers examined data from the New York City MIST trial, focused on 226 stroke patients who received endovascular thrombectomy from January 2017 to February 2020 at four hospitals within the Mount Sinai Health System (one is a certified comprehensive stroke center and three are thrombectomy-capable stroke centers). Of those, 106 patients were treated by the MIST team, and 120 were treated using the drip and ship model of care, which requires the patient transfer to a hospital with expertise in endovascular thrombectomy. Current standards are to treat patients with medications to dissolve the clot and then transfer the patient to a hospital with the expertise to perform endovascular thrombectomy. All patients in the analysis were functionally independent before having a stroke.
Researchers compared 90-day functional outcomes between patients treated by MIST and those transferred to a stroke center for endovascular thrombectomy. Using the modified Rankin Scale (mRS) and the National Institutes of Health Stroke Scale to assess outcomes, they analyzed results of patients who were seen within six hours of stroke-symptom onset (early therapeutic window) and after six hours of stroke symptoms (late window).

Key findings were:

- For patients treated within six hours of stroke onset, the early window, the rate for a good outcome (mRS less than or equal to 2—mobile and can perform daily tasks) three months after the event was significantly higher in patients from the MIST group (54%), compared to the patients in the transferred group (28%).

- Among patients treated during the early window, functional outcomes at discharge were significantly better among the MIST patients than the transferred patients.

- For patients treated in the late window, however, outcomes were similar: 35% of patients in the MIST group had a good 90-day outcome, compared to 41% in the transferred group.

"Ischemic strokes often progress rapidly and can cause severe damage because brain tissue dies quickly without oxygen, resulting in serious long-term disabilities or death," Fifi said. "Assessing and treating stroke patients in the early window means that a greater number of fast-progressing strokes are identified and treated."

However, the study’s findings are limited because it was not a randomized study. Data for the NYC MIST trial was collected prospectively, however, this analysis was done retrospectively. "The MIST approach to care continues as more institutions and cities have implemented the model," Fifi said.

"This study stresses the importance of 'time is brain,' especially for patients in the early time window. Although the study is limited by the observational, retrospective design and was

A 2019 American Heart Association Policy Statement recommends that Emergency Medical Services (EMS) should consider using additional travel time of up to 15 minutes to transport patients suspected of having a severe stroke directly to a hospital capable of administering clot-dissolving medications and/or performing endovascular thrombectomy.

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