

# Specialized ambulance improves treatment time for stroke

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Using an ambulance that included a computed tomography (CT) scanner, point-of-care laboratory, telemedicine connection and a specialized prehospital stroke team resulted in decreased time to treatment for ischemic stroke, according to a study in the April 23/30 issue of *JAMA*, a neurology theme issue.

Stroke is a leading cause of death and disability. In acute [ischemic stroke](#), thrombolysis (dissolving of blood clots) using intravenous [tissue plasminogen activator](#) (tPA) is the treatment of choice after excluding bleeding in the brain by imaging. Past studies have shown time-dependent benefits of tPA, with early treatment associated with better outcomes. Apart from delayed patient presentation, management inside and outside of the hospital contributes to treatment delays. Recent data from the United States indicate that less than 30 percent of patients have a door-to-needle time for receiving tPA within the recommended 60 minutes. A recent study reported time-savings for 12 tPA administrations performed in a special ambulance with a CT scanner and laboratory. Little is known about the overall effects of specialized ambulances for treating patients with [stroke](#), according to background information in the article.

Martin Ebinger, M.D., of Charité–Universitätsmedizin Berlin, Germany, and colleagues conducted a study in which a specialized ambulance (Stroke Emergency Mobile [(STEMO)]) was randomly assigned weeks when it was available for response in Berlin, which has an established [stroke care](#) system with 14 stroke units. The ambulance was equipped with a CT scanner, point-of-care laboratory, and telemedicine connection; a tool to help identify stroke at the dispatcher level; and a specialized prehospital stroke team, which included a neurologist, paramedic, and a radiology technician. If ischemic stroke was confirmed and contraindications excluded, thrombolysis was started before

transport to hospital. The overall study population included 6,182 patients.

The researchers found that compared with control weeks, the average alarm-to-treatment (defined as when the dispatcher activated the alarm to tPA administration) time reduction was 25 minutes among patients receiving tPA after STEMO deployment. Also, the rate of tPA treatment in ischemic stroke was higher after STEMO deployment (33 percent) than during control weeks (21 percent).

STEMO deployment was not associated with increased risk for intracerebral hemorrhage or 7-day mortality.

The authors note that the effects found in this study have to be weighed against costs of the STEMO concept. Depending on the configuration of the vehicle, a single STEMO ambulance costs about \$1.4 million. Cost-effectiveness analyses are currently under way.

"Our study showed that the ambulance-based thrombolysis was safe, reduced alarm-to-treatment time, and increased thrombolysis rates," the researchers write. "Further studies are needed to assess the effects on clinical outcomes."

**More information:** [DOI: 10.1001/jama.2014.2850](https://doi.org/10.1001/jama.2014.2850)

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