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## Patterns of Emergency Medical Services Use and Its Association With Timely Stroke Treatment

### Findings From Get With the Guidelines-Stroke

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## Abstract

**Background**—Prior studies found that only about half of stroke patients arrived at hospitals via emergency medical services (EMSs), yet since then, there have been efforts to increase public awareness that time is brain. Using contemporary Get With the Guidelines-Stroke data, we assessed nationwide EMS use by stroke patients.

**Methods and Results**—We analyzed data from 204 591 patients with ischemic and hemorrhagic stroke admitted to 1563 Get With the Guidelines-Stroke participating hospitals with data on National Institute of Health Stroke Score and insurance status. Hospital arrival by EMSs was observed in 63.7% of patients. Older patients, those with Medicaid and Medicare insurance, and those with severe stroke were more likely to activate EMSs. In contrast, minority race and ethnicity and living in rural communities were associated with decreased odds of EMS use. EMS transport was independently associated with earlier arrival (onset-to-door time,  $\leq 3$  hours; adjusted odds ratio, 2.00; 95% confidence interval, 1.93–2.08), prompter evaluation (more patients with door-to-imaging time,  $\leq 25$  minutes; odds ratio, 1.89; 95% confidence interval, 1.78–2.00), more rapid treatment (more patients with door-to-needle time,  $\leq 60$  minutes; odds ratio, 1.44; 95% confidence interval, 1.28–1.63), and more eligible patients to be treated with tissue-type plasminogen activator if onset is  $\leq 2$  hours (67% versus 44%; odds ratio, 1.47; 95% confidence interval, 1.33–1.64).

**Conclusions**—Although EMS use is independently associated with more rapid evaluation and treatment of stroke, more than one third of stroke patients fail to use EMSs. Interventions aimed at increasing EMS activation should target populations at risk, particularly younger patients and those of minority race and ethnicity.

Key Words:

- [emergency medical services](#)
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- [stroke](#)
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