

# Advanced life support ambulance transport increases mortality

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Patients with trauma, stroke, heart attack and respiratory failure who were transported by basic life support (BLS) ambulances had a better chance of survival than patients who were transported by advanced life support (ALS) ambulances, a study of Medicare patients in urban counties nationwide found.

"We studied conditions that were representative of the major causes of death where we thought we were most likely to see a benefit from the kinds of services that ALS provides," said Prachi Sanghavi, a visiting research fellow in [health care](#) policy at Harvard Medical School and assistant professor in the Department of Public Health Sciences in the Biological Sciences Division of the University of Chicago. "But what we found was that basic [life support](#) patients were more likely to survive and more likely to have better non-survival outcomes like neurological functioning."

The results are published in *Annals of Internal Medicine*.

Advanced life support [ambulances](#) are responsible for 65 percent of emergency care for Medicare patients in the United States and are dispatched preferentially for patients with life-threatening conditions.

The study analyzed outcomes for nearly 400,000 emergency patients from a 20 percent random sample of traditional Medicare beneficiaries from non-rural counties between 2006 and 2011. The research was conducted at Harvard Medical School with co-authors Anupam Jena,

HMS associate professor of health care policy; Joseph Newhouse, John D. MacArthur Professor of Health Policy and Management at Harvard University; and Alan Zaslavsky, HMS professor of [health care policy](#) (statistics).

The researchers studied survival differences between patients who received advanced life support transport in counties that use more ALS ambulances and patients who received basic life support transport in counties that use less ALS ambulances. They found that patients with acute myocardial infarction (or heart attack) were 5.9 percent more likely to survive for 90 days after their ambulance transport if they were transported in a BLS rather than ALS ambulance.

Patients with stroke, who were transported in BLS ambulances, had a 4.3 percentage point greater chance of surviving for 90 days (with overall stroke survival in the sample at 71 percent), and BLS transported patients with critical major trauma had a 12.5 percentage point greater chance of surviving for 90 days than ALS transported patients with the same conditions.

In addition to improved outcomes, greater use of BLS ambulances would also save money, the researchers said. Using 2011 reimbursement levels of advanced life support and basic life support transport, they found that Medicare would have spent \$322 million less on ambulance services in 2011 if all ground emergency rides had been BLS.

"This study demonstrates that in medicine costlier isn't always better; simply transporting the patient to the hospital as soon as possible appears to have a high payoff," Newhouse said.

Advanced life support ambulances, staffed by paramedics, are equipped to perform more invasive procedures than BLS ambulances, which are staffed by emergency medical technicians. Faced with a patient in

respiratory distress, an ALS crew might intubate the patient; a BLS crew in the same situation would use a bag-mask respirator. The ALS approach—known as "stay and play"—takes longer to deliver patients to the hospital than the BLS "scoop and run" methodology.

There is scant evidence for the benefits of ALS transport, the researchers said, and some evidence that it is harmful to patients, including a study last year by the same team that showed better survival rates following BLS transport for patients with cardiac arrest.

The researchers used two distinct approaches to measuring the differences between ALS and BLS outcomes, in order to overcome any potential selection biases that might have been inherent in either model. Both approaches generally found that BLS patients for the studied conditions had better survival rates than ALS [patients](#).

Provided by Harvard Medical School

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