

## Helicopter Transport Increases Survival for Seriously Injured Patients, Study Finds



Severely injured patients transported by helicopter from the scene of an accident are more likely to survive than patients brought to trauma centers by ground ambulance, according to a new study published in *The Journal of Trauma: Injury, Infection, and Critical Care*. The study is the first to examine the role of helicopter transport on a national level and includes the largest number of helicopter-transport patients in a single analysis.

The finding that helicopter transport positively impacts patient survival comes amid an ongoing debate surrounding the role of helicopter transport in civilian trauma care in the United States, with advocates citing the benefits of fast transport times and critics pointing to safety, utilization and cost concerns. The new national data shows that patients selected for helicopter transport to trauma centers are more severely injured, come from greater distances and require more hospital resources, including admission to the intensive care unit, the use of a ventilator to assist breathing and urgent surgery, compared to patients transported by ground ambulance. Despite this, helicopter-transport patients are more likely than ground-transport patients to survive and be sent home following treatment.

"On the national level, it appears as though helicopters are being used appropriately to transport injured patients to trauma centers," said Mark Gestring, M.D., lead study author and director of the Kessler Trauma Center at the University of Rochester Medical Center. "Air medical transport is a valuable resource which can make trauma center care more accessible to patients who would not otherwise be able to reach such centers." Gestring serves as a volunteer board member for Mercy Flight Central Inc., a Canandaigua, New York-based air medical services company.

Previous studies on the use of helicopters to transport injured patients report mixed results, but are limited by small patient populations from single institutions or specific regions. Some smaller studies propose helicopters are overused, transporting patients with relatively minor injuries who would likely fare as well if transported by ground. However, the new national data does not reveal such a trend. "The goal is always to get the sickest people to the trauma center as fast as possible, and our data suggest that's exactly what's happening. We're not seeing helicopters being used to transport trivial cases, which is undoubtedly a poor use of resources," noted Gestring.

The study included patients transported from the scene of an injury to a trauma center by helicopter or ground transportation in 2007. Gestring and his team used the National Trauma Databank to identify 258,387 patients -- 16 percent were transported by helicopter and 84 percent were transported by ground. The helicopter-transport patients were younger, more likely to be male and more likely to be victims of motor vehicle crashes or falls, compared to ground-transport patients. Overall, almost half of the helicopter-transport patients were admitted to the intensive care unit, 20 percent required assistance breathing for an average of one week and close to 20 percent needed an operation. Even though they arrived at the hospital in worse condition, they ultimately fared better than those transported by ground.

While the study shows that air transport does make a difference in patient outcomes, there is no data available to explain why patients transported by helicopter do better than those transported by ground. Study authors assume that speed of transport -- helicopters are capable of higher speeds over longer distances regardless of terrain -- and the ability of air-medical crews to provide therapies and utilize technologies that are not universally available to ground unit crews, are the main drivers of positive patient outcomes. Helicopter transport has been an integral component of trauma care in the United States since the 1970s, due in large part to the military's experience transporting sick or injured soldiers during war time. The availability of helicopters in the civilian setting has been credited with improving trauma center access for a significant percentage of the population.

According to Gestring, the study has some limitations. It is not possible to evaluate the multitude of factors that drive the individual decisions to transport a patient by helicopter in each and every case. In addition, the general nature of the dataset limits specific conclusions that may be drawn or applied to any individual trauma system. The Kessler Trauma Center at the University of Rochester is Western New York's largest trauma center, serving Rochester and the nearly 2 million people in the 17 counties which surround the Finger Lakes Region. The Center is a Level-1 trauma center, providing 24-hour access to comprehensive emergency services. Physicians treat more than 3,000 traumatic injury patients a year.

In addition to Gestring, Joshua Brown, B.A., Nicole Stassen, M.D., Paul Bankey, M.D., Ph.D., Ayodele Sangosanya, M.D., and Julius Cheng, M.D., M.P.H., from the University of Rochester Medical Center participated in the research. The study was conducted and funded by the University of Rochester.

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Journal Reference:

Joshua B. Brown, Nicole A. Stassen, Paul E. Bankey, Ayodele T. Sangosanya, Julius D. Cheng, Mark L. Gestring. Helicopters and the Civilian Trauma System: National Utilisation Patterns Demonstrate Improved Outcomes After Traumatic Injury. *The Journal of Trauma: Injury, Infection, and Critical Care*, 2010; 69 (5): 1030 DOI: 10.1097/TA.0b013e3181f6f450

Published on : Mon, 10 Jan 2011