



A Heart-Stopping Mission

On March 19, 2012, Jim Stevens was having that familiar shopping experience of many husbands... he was in a big store trying to find his wife. Suddenly, it was hard for Jim to stand and he began to lose consciousness. Jim collapsed and hit the back of his head hard. Bystanders witnessed him having a seizure. He was whisked out of the store unbeknownst to his wife and taken by **Three Rivers EMS to Three Rivers Health**. Eventually, Jim's wife caught up to him in the Emergency Department.

Because Jim had experienced trauma as well as a cardiac event, his care was more complex than usual. When WMAC landed at Three Rivers Health, the crew conferred with the cardiology team at Bronson Methodist Hospital by phone and subtle STEMI ECG findings were identified. Heparin was deferred due to the possibility of ongoing bleeding in his brain, and he would first be met by physicians in Bronson's ER. Abruptly after this plan was decided however, Jim's heart began beating in a rhythm

known as ventricular tachycardia. He was cardioverted twice by WMAC, but deteriorated to ventricular fibrillation and was defibrillated. CPR was initiated, epinephrine was given, and Jim rapidly regained pulses and consciousness. The staff of Three Rivers assisted WMAC in providing Jim with an antidysrhythmic called amiodarone, to prevent his lethal ventricular rhythms from recurring. Jim lost and regained consciousness repeatedly during the next few minutes, but his heart rhythm stabilized following the amiodarone infusion. Jim was responsive at that point, but drowsy and confused, and his prior instability made him a clear candidate for airway protection before transport. After RSI intubation by WMAC with the Glidescope®, Jim was flown to Bronson. Jim went to the heart catheterization lab, where he received a stent and a temporary pacemaker. Happily, he was discharged from Bronson after only a few days.

Jim loves his work as a process server and was glad to start working again shortly after his discharge from Bronson. He also continued outpatient cardiac rehab which included lifting weights and walking on a treadmill. Jim graduated from cardiac rehab recently and has arranged to continue exercising. He looks forward to picking up his former hobby, ice fishing, this winter.

Jim knows a lot of people worked quickly the day of his heart attack to save his life, but cannot recall any of them. His lasting memory of that day is one of peace. "I was lying in the grass and it was warm. The sky was beautiful," he said. Regarding those who helped him, Jim said, "I sure do want to thank them all. I can't remember any of it, but I sure do want to thank everyone."

Helicopter Transport Increases Survival for Seriously Injured Patients

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 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



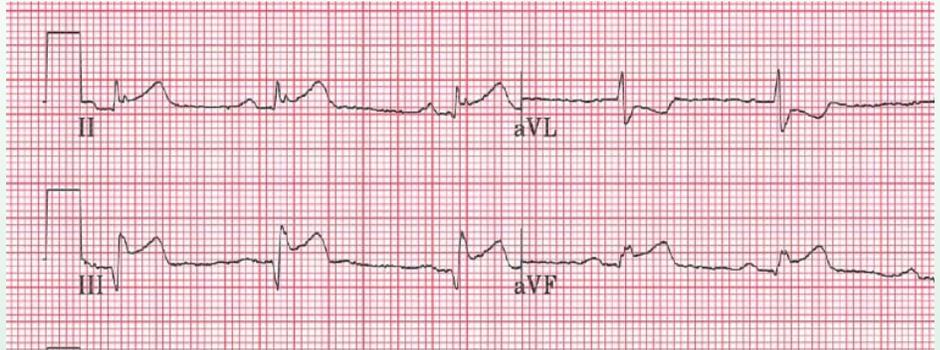
Jim Stevens with his wife, Lynda.

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STEMI with Cardiac Arrest

Oliva Mejia Hinojosa, 76, certainly caused a stir on October 24, 2011. That morning she came to South Haven Health System with chest pain and nausea. In the emergency department, an inferior wall STEMI was identified on ECG and transport arrangements were made for Bronson's heart catheterization lab. In short order, however, Oliva's heart stopped, CPR was begun, and Oliva was intubated. West Michigan Air Care was activated and arrived while CPR was in progress. The WMAC team helped the emergency department staff in administering defibrillations along with the medications epinephrine and amiodarone. Within 6 minutes of WMAC arrival, return of spontaneous circulation (ROSC) had been achieved and Oliva was quickly placed on the vasopressor infusion norepinephrine to maintain an adequate blood pressure. Oliva's vital signs stabilized and she was sedated by WMAC and cooled with a cold saline bolus to protect her neurologic outcome.

Shortly after lift-off back to Bronson, Oliva's heart rate trended downward



and she suffered another episode of pulseless arrest. Ventricular tachycardia was defibrillated by the flight nurses, CPR was initiated, and additional epinephrine and amiodarone were given with rapid return of pulses and end tidal CO₂. Only 14 minutes after liftoff from South Haven, Air Care landed at Bronson, and Oliva's heart stopped once again. Again the flight nurses revived her, this time with CPR and medications. After a short diversion in ER, the flight nurses transferred Oliva to the cath lab where her heart stopped again, and resuscitation efforts continued alongside prep for the

heart catheterization procedure. Angiography showed her right coronary artery was 100% blocked, and it was successfully reopened with stent placement. With blood flow to the heart reestablished, Oliva became more stable. She was discharged from Bronson 8 days later.

Oliva, who primarily speaks Spanish, relayed a message to all her health care providers through her daughter. "She doesn't remember," Oliva's daughter said, "but she says she's so glad you all took care of her. She's so glad she's still alive, and so happy that so many people are there to help."

Photo Submission

Photo taken on scene by Michigan State Trooper Mark Miller.



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Helicopter Transport Increases Survival for Seriously Injured Patients *(continued from page 1)*

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.”

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

“The study included ... 258,387 patients.”

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.



The above story is reprinted from materials provided by University of Rochester Medical Center.

1. 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 Utilization Patterns Demonstrate Improved Outcomes After Traumatic Injury. *The Journal of Trauma: Injury, Infection, and Critical Care*, 2010; 69 (5): 1030 DOI: 10.1097/TA.0b013e318116f450



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Glenn Carlson, MSN, ACNP-BC, CCRN – Adult Critical Care Clinical Nurse Specialist and Acute Care Nurse Practitioner, Bronson Methodist Hospital
- 0900 "Helmets Save you for the Rest of Your Life: Shock Management Gets You Through Today"**
Tom Rohs, Jr., MD, FACS – Medical Director, Trauma and Emergency Surgery, Borgess Medical Center
- 1015 "Humpty Dumpty Kids"**
Robert Beck, II, M.D. – Medical Director, Pediatric Intensive Care Unit, Bronson Methodist Hospital
- 1115 "Early Recognition and Management of Septic Shock"**
William Nichols, Jr., D.O. – Medical Intensivist, Borgess Medical Center
- 1315 "Wilderness Medicine – Lessons from the Field"**
Matthew Stauffer, M.D., M.A., F.A.W.M. – Emergency Medicine Resident, Western Michigan University School of Medicine
- 1415 "Slip Sliding Away: Sudden Cardiac Death"**
Rosalind Lee-El, RN, BSN – Central Nurse Educator, Borgess Medical Center
- 1515 "Taking the Pain out of Pain Management"**
Kevin Franklin, RN, CFRN, EMT-P – Flight Nurse, West Michigan Air Care

Questions? Email the editor at dmjohnston@aircare.org



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