EMS MYTHOLOGY

Part 6

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EMS Myth #6

Air medical helicopters save lives and are cost-effective

I love helicopters. Riding in them is both unique and exhilarating. I have spent many hours in a helicopter providing emergency medical care in between police chases and other city activities. Many have called air medical helicopters nothing more than “flying billboards” for the hospitals that operate them. In this day of dwindling healthcare dollars, we must ask ourselves some hard questions: Do helicopters really make a difference in EMS? Do they provide a significant benefit for the patient? Are the risks worth any real benefit? Why do we not see a proliferation of helicopter operations in other countries like we are seeing in the U.S.? Unfortunately, any discussion of air medical helicopter efficacy often results in an emotional response by many. I have heard flight nurses say, “I know what I do makes a difference.” Flight paramedics will often relay a story about a particular patient they feel benefited from helicopter transport. But, do helicopters really make a difference in patient care and the subsequent quality of the patient’s life? To answer this, let’s look at what the scientific literature says.

The Scientific Evidence

Initial studies published in the 1980s were supportive of air medical transport of emergency patients. However, more detailed recent studies have shown that this may no longer be the case. Several recent studies have shown that use of helicopters for trauma patients actually benefits only a small number of patients. Furthermore, these studies indicate that many EMS providers summon medical helicopters when the patient’s condition may not warrant their use.

Researchers studied helicopter usage in the Silicon Valley region of California. In a retrospective review of 947 consecutive trauma patients transported to their trauma center, they found that only 22.8% of study patients possibly benefited from helicopter transport. They further found that 33.5% of patients transported by helicopter were discharged from the emergency department and not admitted to the hospital. In the Los Angeles area, researchers retrospectively evaluated helicopter transport of 189 pediatric trauma patients and found that 85% of patients were considered to have minor injuries. Of the patients transported by helicopter in their study, 35% were discharged home from the emergency department and not admitted to the hospital. In another pediatric trauma study, researchers in Washington, DC, found that approximately 85% of air transports in their study group of 3,801 injured children were considered overtriaged. A Boston study of 1,523 patients transported by helicopter found that 24% of patients transported from an accident scene were deemed inappropriate. Similar findings were reported from an Australian study.

In northern coastal New South Wales, researchers reviewed 184 medical records of patients transported from an accident scene to a hospital. An expert panel reviewed all helicopter patient retrievals. They found that only 17.3% of patients benefited from helicopter transport, while 1.7% of patients were felt to have been potentially harmed. Seventy percent of patients were discharged from the emergency department and not admitted to the hospital, while 36% were discharged from the hospital within 48 hours. In a Hong Kong study, 34.1% of patients transferred by helicopter from a scene were discharged from the emergency department and not admitted to the hospital. In a Norwegian study, researchers found that only 11% of the 370 patients transported by helicopter benefited. British researchers...
found no evidence of any improvement in patient outcomes for patients transported by the London Helicopter EMS. When the University of Texas Medical Branch at Galveston discontinued its hospital-based air medical helicopter, they found that there was no decrease in transport time or increase in mortality for trauma patients at their facility. In a five-year study of blunt trauma patients transported either by helicopter or ground ambulance, researchers in Phoenix, AZ, found no survival advantage for patients transported by helicopter in an urban setting with a sophisticated prehospital care system. In a North Carolina study, researchers found that only a very small subset of patients transported by helicopter appeared to have any chance of improved survival based on their helicopter transport. In a detailed study of 162,730 patients treated at 28 accredited trauma centers in Pennsylvania from 1987–1995, researchers found that transportation by helicopter did not affect the estimated odds of survival. A Houston, TX, study found that patients with penetrating trauma do not benefit from helicopter transport and scene flights are not medically efficacious. In an eight-year Pennsylvania study of 3,048 penetrating trauma victims, researchers found that patients transported by helicopter had longer transport times and no significant difference in mortality compared with those transported by ground. Likewise, patients with severe head injuries and burns do not appear to benefit from helicopter transport.

When interfacility helicopter transport of patients was studied, the results were also interesting. In a study of 1,234 patients transported between facilities by helicopter, researchers found that those patients did not have improved outcomes compared with those transported by ground. Clearly, additional studies are needed.

A factor often overlooked is helicopter safety. There has been a steady increase in the number of helicopter accidents. In fact, over the last 10 years in the U.S., there have been 83 helicopter accidents resulting in 70 deaths and 62 injuries. Furthermore, 52% of accidents in this 10-year period occurred during the last three years of the study (2000–2002). The helicopter most frequently involved was the single-engine Bell 206 Long Ranger, followed by the twin-engine Eurocopter BK-117. Primary cause of accidents in the study period was pilot error.

**Conclusion**

Again, we have embarked on an EMS adventure that has conflicting scientific evidence. But, medicine evolves and prehospital medicine similarly evolves. When the original studies were published regarding the effectiveness of helicopters, EMS was in an earlier developmental stage. At that time, helicopters could offer added patient care skills and interventions not available on ground ambulances. Now, with prehospital care being considerably more sophisticated, helicopters offer little more than increased speed. And, in the overall scheme of things, speed makes a difference for only a limited number of patients. The proliferation of helicopter operations in this country over the last decade cannot be supported with science. Helicopters cost between $1,500,000–$5,700,000 to purchase and up to $1,000,000 a year per aircraft to operate. Thus, a significant amount of financial resources are going into a transport modality that actually benefits few patients. These large sums of money would buy many AEDs and ground ambulances that would stand to benefit more of our citizenry. With a dwindling healthcare dollar, we will soon have to make some tough decisions.

There certainly is a role for helicopters in EMS, but we have them in the wrong places. The majority of the fleet is parked atop hospitals in urban centers where ground transport takes only minutes. They need to be positioned where they will benefit the people who need them most—those who live in rural settings. That is, they need to be closest to the hospitals and trauma scenes where they can potentially make a difference. The literature certainly supports the role of helicopter transport of critical patients in the rural setting. Thus, there should be a strategically placed network of helicopters that serves rural hospitals and providers. However, as long as hospitals operate helicopters as “flying billboards,” this will probably never happen. But, despite what is often said in the media and at fundraising events, EMS helicopters make a great deal of money for the hospitals that operate them. Researchers at the University of Michigan Health System reported that their Survival Flight Aeromedical service cost approximately $6 million to operate in 2001, but provided $62 million in inpatient revenues. This does not include professional fees earned by the medical staff. Perhaps the solution is to follow the German and Australian models and move EMS helicopters from states to widely EMS-type governing boards based on need. This would certainly promote fairness for all state residents, but I’m afraid that emotion may prevail.

**Next Month: EMS Myth #7**

System Status Management (SSM) lowers response times and enhances patient care

**References**

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**References**