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The American College of Surgeons Committee on Trauma (COT) believes it is important for surgeons to be aware of some of the current issues involving air medical transport. Emergency medical services (EMS) aviation operations using either fixed-wing aircraft or helicopters provide an important service to the public and to the surgical disciplines by transporting critically injured or ill persons or donor organs to trauma centers and hospitals. Numerous trauma and critically ill patients are being transported by this route, and the number of helicopter services in this country is proliferating rapidly.

The increase in crashes

Since 1997, the number of helicopter EMS (HEMS) transport crashes has steadily risen. The reasons for this increase are multifactorial and have been the subject of much scrutiny and many reports. Government agencies and industrial and professional organizations are working to understand more thoroughly the factors responsible for crashes and to make recommendations for improvements in safety.¹⁻⁴ In addition, there is concern among multiple organizations that civilian HEMS is overused, costly, and often misused. There is also worry that the service in closest proximity to the site of the trauma may be overlooked in favor of another service because of ground and air medical transport agreements, kickbacks, or insurance policies that do not have the best interests of the patient in mind.⁵ Nevertheless, in appropriate geographic locations, the use of HEMS in time-critical illness and trauma plays an important role.

The Air Medical Physicians Association, a group made up primarily of the directors of air medical transport programs, has published one of the few medical condition lists detailing indications for the appropriate use of air medical transport.⁶ This list includes traumatic emergency conditions. However, it is doubtful that the list is widely accepted or used. A recent study found that two-thirds of 37,350 trauma patients transported by helicopters had injuries that were considered minor based on validated trauma criteria.⁷ It is also not uncommon for an individual state to be served by several different air medi-

cal transport services without a central dispatch authority, which might occasionally result in two different services traveling to pick up the same patient without mutual awareness, and which can pose a hazard for a near-miss incident.⁸

Addressing the problem

Surgeons in the disciplines of trauma and critical care have become strong advocates for the adoption of state communications, protocols, and dispatch. Protocols would be based on at least patient condition, distance from definitive care, time since injury, and availability of ground transport. This concept of assumption by individual states of regulatory oversight of the medical aspects of air medical services was also endorsed in a recent Institute of Medicine report on EMS (written as part of a broader look at the future of emergency care in the U.S.).⁸ How individual air medical services are dispatched has numerous planes of complexity, and individual states need to evaluate this process. Currently, the Commission of Accreditation of Medical Transport Systems (CAMTS) is the only organization that reviews and accredits air medical transport systems, but the process is costly and not required, and the majority of air medical services in the U.S. are not accredited.

The period from 1990 through 2005 witnessed steady, roughly linear, increases in both the number of HEMS helicopters in service and the numbers of active HEMS transport programs. In spite of improvements in aircraft, accessory equipment, and crew training since 1990, the continued rise in crashes subsequent to 1996 has created major national concern and prompted special investigation reports by the National Transportation Safety Board (NTSB). Many of the HEMS crashes have been associated with night operations and/or inadvertent flight into deteriorating weather. Other identified problems include hazardous terrain; collision with objects; inaccurate weather forecasts; and communication issues, or lack thereof, with air traffic control because of remote locations and high terrain.¹

“Helicopter shopping” is another defined problem with potential untoward consequences that place both the crew and patient at significant and unwarranted risk. This occurrence is when an air medical service declines a request for a response,



A STATCARE Dauphine helicopter lifting off from University of Louisville (KY) Hospital, a level I trauma center.

possibly because of inclement weather, and the dispatch can contact another service without disclosing this information—possibly placing the responding air medical team and the patients transported at significant and unwarranted risk. In October 2006, the National Association of State EMS Officials passed a resolution to support the cessation of this practice.

Federal Aviation Administration (FAA) notices published in January⁹ and August¹⁰ 2005 about HEMS operational safety provided useful suggestions about flight risk assessment and urged renewed HEMS program management and leadership commitment to safety. The January notice announced increased FAA surveillance and inspection oversight of HEMS programs and instructed FAA district offices and field inspectors to seek additional details from HEMS programs about operational safety standards, risk assessment, and safety management systems.

On January 25, 2006, the NTSB held a public hearing for review of its *Special Investigation*

Report on Emergency Medical Services Operations.¹ In this report, 55 recent HEMS crashes were reviewed, and noted similarities included the following: (1) less stringent requirements for EMS operations conducted without patients on board; (2) a lack of aviation flight risk evaluation programs for EMS operations; (3) a lack of consistent, comprehensive flight dispatch procedures for EMS operations; and (4) no requirements to use technologies such as terrain awareness and warning systems to enhance EMS flight safety. Subsequent to this NTSB hearing, a full report and recommendations to the FAA were published. These recommendations would require all EMS operators to employ more stringent weather criteria when medical crews are on board aircraft, implement flight risk evaluation programs, use a dispatch system and flight following that includes current weather briefings, and install terrain awareness and warning systems in all aircraft and train crews to properly use the equipment.



The Simpsonville (KY) Fire Department carrying a motor vehicle crash trauma patient on a stretcher to the waiting STATCARE helicopter, following a 45-minute extrication.

The FAA has also been very concerned over the past 12 to 18 months about the operational control of on-demand charter operators (FAA part 135 operators), which include all of the EMS rotor and fixed-wing air transport businesses. The FAA released a notice in December 2006, mandating oversight responsibility and account-

ability for flight safety at all times by on-demand charter businesses.¹¹

The Association of Air Medical Services established a priority goal, "Vision Zero," in March 2005. This goal and slogan will hopefully provide multidisciplinary focus on air medical transport safety and lead to a year in the future of "zero errors of consequence with no fatal crashes or serious injuries." This initiative is modeled after the Swedish automobile crash reduction program of similar name. The goal of achieving zero air medical transport crashes in one year is a noble one.

Contemporary surveys suggest that a majority of physicians and surgeons believe that they function as safely when challenged by fatigue, in the presence of inexperienced team members, during emergencies, and under adverse circumstances, as they function under normal, more ideal circumstances.¹²

The greatest strides in improving safety will only be made when we acknowledge our shortcomings and our potential to produce errors. All



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professionals who are involved in any way with medical transport programs must learn to look continuously for threats to safety and recognize errors before they evolve into incidents and crashes. Evaluation of process and performance review conducted in multidisciplinary fashion are additional ways to improve safety.

Air medical transport teams need maximal support from surgical organizations and communities as we attempt to manage threats to safety, eliminate or ameliorate errors, and eliminate crashes. The ACS COT needs to join ranks with the Air Medical Physicians Association and others who strive to best determine the time-sensitive and critical illnesses that require air medical transport.

The ACS COT recognizes the following factors:


- Many of our trauma, burn, and critical care patients and organs for transplant undergo air medical transport.

- The COT should be concerned—along with many program facilitators, agencies, organizations, and individual families—about the increase in HEMS crashes since 1996.

- A primary goal must be the safe delivery of patients and organs for transplant to their destination and safe return of transport teams after each flight.

- The development and adherence to protocols with defined indications for air medical transport may further enhance the safe transportation of patients and crews.

- A team approach in recognizing threats to safety and operational errors, as well as strong support and endorsement of safety initiatives by the COT, will help to maximize improvements in HEMS transport safety.

The COT must work with and strongly support efforts of the Air Medical Physicians Association to further refine and employ strict criteria for the appropriate use of air medical transport. In addition, support by the ACS COT of the standards developed by the CAMTS will help reduce inappropriate use of air transport resources and scene conflicts between competing helicopter services. 

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