



AIR MED "101"

It is estimated that there are around 400,000 **helicopter** EMS missions flown each year. There are an additional 100,000 – 150,000 **fixed wing** medical flights each year. In 2002, there were roughly 400 dedicated EMS helicopters. At the close of 2008, there are a little more than 800 flying EMS missions.

Valid reasons exist for the growth in air medicine that are specifically linked to the changes in the overall healthcare system. The top three include:

1. An aging demographic.

According to the US Department of Health and Human Services, "It was estimated that in 2000 there were 605 million persons worldwide aged 60 years or older. This number is projected to increase to almost 2 billion by 2050." This trend is particularly noticeable in the US, with a rapidly increasing aging population, especially in rural areas. The medical needs of this population demographic are reflected in the growing rates of trauma, as well as the increased occurrence of time-dependent diseases such as heart attack, stroke, and non-trauma surgical emergencies such as gastro-intestinal bleeds.

2. Closure of emergency departments and hospitals, as well as local, community-based ambulance services.

According to the American Hospital Association, emergency departments in community hospitals have declined from just over 5000 in 1992 to approximately 4600 in 2002, a trend that is expected to continue. As a result, air medicine is becoming the health care safety net and access point for many rural individuals and communities.

3. Changes in the delivery and availability of rural healthcare.

Rural hospitals have been undergoing a rapid change in mission and structure during the last 50 years. In an effort to help maintain a sufficient number of hospitals, the Centers for Medicare & Medicaid Services has developed the Critical Access Hospital program which pays full cost for Medicare beneficiaries. This has come in exchange for structural changes in the hospital, which include reducing beds to 25 or fewer and shortening average length of stay to less than 96 hours. The expected result is to keep hospitals open, which is a tremendous benefit to rural communities. However, it also leads to a concurrent need to transfer complex patients to distant trauma and tertiary care centers, requiring a rapid and even more sophisticated medical transport system.



AIR MED "101"

Higher Level of Care

Helicopter emergency medical services (HEMS) are integral to the US healthcare system for several reasons:

The crews aboard air ambulances provide more than the advanced-life-support-level medical skills and equipment found on ground ambulances. In addition, they bring the additional skills, equipment and supplies of a tertiary hospital, including more advanced drugs, and more sophisticated critical care medical skills whenever they respond to a community hospital, to the scene of an injury or accident, or to a pre-planned rendezvous point with a ground ambulance (a common practice for fixed wing, or airplane, air ambulances). This higher level of care is especially important in rural areas, which may have few advanced-life-support ground ambulances to call upon.

The current configuration for the medical crew on board advanced-medical-support units is most typically a specially trained critical care nurse and paramedic. Other specialist caregivers or physicians may be added to the team as needed. This configuration effectively initiates tertiary hospital care directly at the patient's bedside, whether at the scene of an emergency or at a community hospital. Almost exclusively, the AMS team handles the most critically ill and injured patients. The benefits of air transport have been demonstrated to outweigh any stressors that flying might add, even for the sickest trauma and, notably, heart attack patients.

Speed, Access and Better Patient Outcomes

Helicopter air ambulances are used to transport patients from the emergency scene to a hospital, and for shorter flights between smaller hospitals and trauma centers or specialty hospitals (burn or cardiac centers, for instance). Fixed wing air ambulances (airplanes) are used for transporting patients on longer inter-hospital flights.

Air medical transport is beneficial not only because it provides a higher level of medical care to the patient en-route, but also because it provides speedier response and travel times. When treating the critically ill or injured, it is always important to minimize the time spent delivering a patient to a physician's direct care. Helicopters fly point-to-point, minimizing the distance traveled and avoiding the traffic delays experienced by ground ambulances.

Patients isolated from ground EMS or trauma centers by distance, lack of ambulance-passable roads or by terrain features such as mountains, canyons, forests, and bodies of water, benefit greatly from air medical service. Helicopter EMS is also a timesaving way to avoid urban and suburban traffic congestion.



AIR MED "101"

Patient Conditions and Transport Selection

Following are the top three patient conditions most often associated with Helicopter Emergency Medical Services (HEMS):

- **Cardiac Care/Myocardial Infarction:** Several studies suggest that the scarcity of cardiac intervention centers have resulted in a greater need for HEMS in quickly transporting cardiac and cardiac-arrest patients, particularly outside of urban areas.
- **Cerebrovascular Accidents/-strokes:** As with heart attacks, only a short window of time exists in which anti-thrombotic treatment can result in patients suffering little to no long-term damage and disability. That treatment window is optimally within 90 minutes but generally no more than three hours. Therefore, patients transported to specialty centers for the treatment of strokes can benefit from a well-coordinated ground and air system to accomplish early transfer.
- **Critical Trauma:** Scene responses (i.e. motor vehicle crashes, stabbings, shootings, etc.) constitute 33% of HEMS missions. Medical studies have revealed correlations between HEMS transports and improvements in trauma-related mortality and morbidity. As a part of an organized trauma system, HEMS reduces the injury-to-operating-room time significantly. HEMS discourages time-costly intermediate stops at small non-trauma center facilities. Such stops have been shown to be detrimental to trauma patients.
- **Other conditions that may warrant air medical transport include:**
 - **High Risk Obstetrics/Neonatal Care:** When a pregnant woman or fetus experiences complications, these can be life-threatening for both mother and child.
 - **Complex Pediatrics:** Children are very resilient patients who often do not show signs of a severe illness or injury until they are close to death, at which point they suddenly deteriorate. When this occurs, they require access to neonatal and pediatric intensive care units, which are becoming increasingly limited.
 - **Complex Surgical and Medical Conditions:** Air medical service is indicated for a number of other time-critical patient conditions. Examples of these include aortic aneurysms, poisoning or overdose, organ transplantation (movement of patients and organs), and respiratory complications requiring ventilator support. In addition, HEMS is often required when emergency kidney-dialysis is needed or when carbon monoxide poisoning or diving-related incidents have occurred.



AIR MED "101"

Focus on Safety

Safety is the highest priority for air medical crews. After all, these are the people at work aboard the aircraft. However, providing these lifesaving services is not without risk. AAMS works closely with the Federal Aviation Administration (FAA), the National Transportation Safety Board (NTSB), and Congress to manage that risk for the sake of the crews and patients.

In recent years, special focus has been placed on advances in safety management systems, aviation technologies, and crew training. Numerous aviation technologies have been refined and incorporated into many air medical programs' operations. Among these technologies are night vision goggles (NVGs) and enhanced vision systems, radar altimeters, GPS navigation, satellite tracking, and, more recently, helicopter terrain alert warning systems (HTAWS). Survivability gear, which includes such products as fire retardant flight suits, helmets, eye protection, and satellite phones, also has become the standard for most air medical programs across the country.

In addition, enhanced crew and safety management systems have become a part of the everyday operation of air medical systems. Often referred to as Air Medical Resource Management (AMRM), such systems greatly improve both safety and efficacy on air medical missions by enhancing the ability of aviation personnel, flight crew, ground-based communication staff, and management to interact proactively on a mission-to-mission basis.

Safety management systems further help companies track incidents, identify issues, and solve problems before they happen or become system-wide mistakes that lead to tragedy. Some of the most important advances have been made in risk-management models. These simple management tools help pilots, crews, and managers determine what environmental conditions are acceptable and greatly enhance the management of risk across air medical systems both large and small.

While numerous advances and improvements have been made in air medical services safety, more remains to be done, particularly with regard to the nation's existing aviation infrastructure. Currently, low-altitude aviation vehicles – including helicopters that perform such off-airport operations as air-medical, law-enforcement, fire-suppression, and search-and-rescue missions – do not have access to certain components of the aviation infrastructure, which was built specifically for scheduled, commercial airlines.



AIR MED "101"

Most notably, there is a "weather-reporting gap" that the federal government can help fill by increasing the number of off-airport or small-airport automated weather stations and adding weather-reporting technology to hospital helipads. The FAA has developed, in coordination with the National Center for Atmospheric Research (NCAR), the Helicopter EMS Weather Tool (HEMS WX Tool). This free, online tool (www.weather.aero/hems/) helps bridge the gap in weather reporting by using an algorithm to determine the probable ceiling and visibility in between two aviation approved weather reporting stations.* The results are startling, yet the tool, which has proven very useful for air medical crews in the field, is currently designated only for the "no-go" decision, not to map a flight plan.

AAMS and other aviation groups in Washington continue working with the FAA with the goal of achieving an enhanced low-altitude aviation infrastructure for the use of all helicopter operators, but we cannot accomplish our mission alone. That is why we are also reaching out to educate the public about the crucial need for these pressing infrastructure issues to be addressed.

As one of our members succinctly put it, *"Weather reporting must be significantly more precise than the report you would get from your morning news program before you leave for work."*

The use of air medical helicopters has become an essential component of the health care system. Appropriately used, air medical transport saves lives and reduces the cost of health care. It does so by minimizing the time the critically ill and injured spend out of a hospital, by bringing more medical capabilities to the patient than are normally provided by ground emergency medical services, and by helping get the patient to the appropriate specialty care quickly.