

ASSOCIATION OF AIR MEDICAL SERVICES



Mr. Mark E. Miller, Ph.D.
Executive Director
Medicare Payment Advisory Commission
601 New Jersey Avenue, NW, Suite 9000
Washington, DC 20001

Dear Dr. Miller:

Thank you for taking the time to meet with representatives from the Association of Air Medical Services on March 14th. You and your staff were generous with your time, and my colleagues and I were pleased to have the opportunity to discuss how Medicare Payments and Reimbursements affect the Air Medical Transport Industry. As part of our discussion you asked us to provide data, research, and substantive facts that the Commission could review regarding the Air Medical Transport Industry. We are pleased to submit the attached paper, providing information on the Air Medical Transport Industry, and the conclusions of cited studies for your review. Our goal, and yours, is to find ways to provide high-quality medical care for patients in-need, in the most cost-effective manner. I draw your attention to five areas in particular:

- First, when struck by a serious illness or injury, patients require rapid access to specific specialized or critical care services that provide the highest levels of medical care available in our modern healthcare system. When immediate access to such services is not available, because of circumstance and/or geography, patients experience delayed access to those vital services, often resulting in increased mortality, morbidity, hospital stays and other negative and expensive outcomes, as outlined in the referenced research. Air Medical and Critical Care Ground Transport Services expedite, optimize, and integrate the critical care received by patients from the start of their emergency through their treatment at the appropriate hospital. When high-quality critical care and rapid transport are available close to the point of injury or onset of illness, the most favorable outcomes generally result. In the attached paper, you will find an appendix with a list of studies that demonstrate the value and effectiveness of Air Medical and Ground Critical Care Transport Services.

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- Second, it was once common for critical care units and services to be found in community hospitals throughout our country. However, over the past two decades, hospital specialization has continued to occur, and those services are no longer sustained at every facility. Critical care services and specialists have largely moved from rural settings to urban and suburban centers. This new reality has created a disparity between rural and urban settings for patients who require critical care services for their time-dependent conditions. Air Medical Transport is a resource that brings specialty care and critical care intervention to patients in the field and/or rural settings. (cont...)

*Leading and Serving
Transport Medicine*

Critical Care Ground Transport Services, which provide higher-level care than basic life support or advanced life support ambulance services, also reduce the disparity by bringing critical care specialists to the patient, thereby providing that care faster and more efficiently. Air Medical Services allow patients, regardless of location, to benefit from services often found only in urban areas, where hospitals operate at a higher-volume with greater efficiency, and often include high-level care for patients suffering from trauma, heart attack, stroke, pediatric and neonatal emergencies, high-risk obstetrics, burns, and other life or function-threatening illnesses or injuries. Specialty care flights require aircraft and medical providers that have capabilities greater than other single-patient transports. In the attached paper, you will find a worksheet that attempts to quantify the increased cost to provide those capabilities.

- Third, while the costs associated with both the aviation and medical communities have skyrocketed, Medicare reimbursements have continued to adjust by an average of only 2% per year. Two Air Medical Salary Surveys, conducted in 2000 and 2010, show base salaries for flight paramedics and flight nurses have increased by 57% and 129% respectively, with the highest regional increase taking place in the Pacific Northwest. Flight medical personnel tend to be on the high-end of those increases because they require high-skill sets and extensive experience due to the complexity of their patient population. Basic aviation fuel costs have also risen dramatically. According to Bureau of Transportation Statistics, the cost of Jet Fuel for Major Air Carriers was \$0.69 per gallon in January, 2000 and was \$3.28 per gallon in March, 2012. That increase is not indicative of the overall increase to smaller flight operators who don't purchase bulk fuel and, in some cases, have had to pay well over \$6 per gallon for Jet A fuel from fixed base operators at airports in April, 2012.
- Fourth, the Air Medical Transport Industry is committed to achieving the highest safety standards and to providing safe, effective medical care and medical transport services for all patients in-need. The attached paper provides data, from the Air Medical Operators Association (AMOA), on the costs of implementing required and recommended safety programs. Some of those programs are currently required for our operators to perform their mission, others will likely be required in the near future, based on the Federal Aviation Administration's Notice of Proposed Rulemaking on Air Ambulance and Commercial Helicopter Operations, while others are considered essential for the safe operation of an Air Medical Transport Service.
- Finally, fifth, in 1997, when the national fee schedule was implemented to replace the cost-reimbursement schedule for hospital-based programs, it created the same reimbursement rates for hospital-based and independent Air Medical Programs. With that change, the Air Medical Transport Industry began to shift from hospital-based programs (then >80% of the industry) that could no longer bear the cost of programs that weren't receiving cost-based reimbursements, towards non-hospital based, independent programs, which now make up approximately 60% of the air medical transport capability in the US. Many of the for-profit providers have grown through consolidations in the industry, which have enabled them to amortize their fixed costs, maintenance costs, and operating costs over a larger fleet of aircraft and bases. However, continued economic pressures may lead to more consolidations and the loss of providers' ability to provide Air Medical Transport coverage, particularly to

rural areas that may not maintain sufficient patient volume to cover their costs. That will lead to reduced access in rural areas and may contribute to driving many smaller, hospital-based and/or rural programs out of business. Rural health providers throughout the country make thousands of decisions every day on behalf of their patients, based on their access to, and the availability of, Air Medical and Critical Care Ground Transport Services. Knowing they have the means to transport their patients quickly to a tertiary center allows them to hold their patients longer until they can determine, more definitively, whether the patient is actually going to require a higher level of care. That means more patients stay in their local hospitals longer, closer to their personal support and care systems, which helps support their local health resources. The attached paper provides data on the impact of reimbursement rates on single-base, regional, and nation-wide Air Medical Programs.

I hope you find those points, and the conclusions in our attached paper, useful as you prepare your recommendations to Congress. Controlling the growth of Medicare spending while preserving access to high-quality, efficient care is a challenge worthy of our combined efforts. Thank you again for the opportunity to provide our information. We appreciate the opportunity to continue our dialogue and are prepared to answer any questions you may have.

Sincerely,

A handwritten signature in blue ink, appearing to read "Richard Sherlock".

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MedPAC Report

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I. BACKGROUND

As early as 1926, the United States Army Air Corps used a converted airplane to transport patients from Nicaragua to an Army hospital in Panama, 150 miles away. Routine MedEvac transport utilizing helicopters began during the Korean conflict in the 1950's. In March of 1970, the Maryland State Police transported the first critically injured trauma patient by helicopter in the United States. The first civilian hospital-based medical helicopter service in the United States was established in 1972 at St. Anthony's Hospital in Denver, Colorado.

As of the close of 2009, there were over 4400 MedEvac pilots, 600 physicians, 5500 nurses, and 5300 paramedics/EMTs staffing MedEvac aircraft (both fixed-wing and rotary-wing) in the United States. These people save lives every day and provide critical medical care and safe, rapid transport to the most appropriate healthcare facility during the direst of circumstances.

MedEvac helicopters are most often used for time-sensitive illnesses and injuries such as severe trauma, heart attacks, or strokes. In remote or rural areas, MedEvac helicopters are often the only access to definitive treatment and diagnosis. It is estimated that MedEvac helicopters transport approximately 400,000 patients annually, with MedEvac fixed-wing aircraft transporting an additional 100,000 plus patients over longer distances annually.

II. HEALTH BENEFITS OF AIR MEDICAL TRANSPORT

Numerous studies have shown that the first hour following a trauma is a critical period in determining the final health outcome of the patient. However, 46.7 million Americans live more than an hour away from a Level I or a Level II trauma center. When time and distance are critical, helicopter MedEvac is the quickest and most-efficient way to get critical medical care to the patient and then get the patient to the appropriate medical facility. In April, the Journal of the American Medical Association published a study that concluded, "Among patients with major trauma admitted to Level I or Level II trauma centers, transport by helicopter compared with ground services was associated with improved survival to hospital discharge after controlling for multiple known confounders." (JAMA 2012; 307(15): 1602-1610.)

Cited below are several additional peer-reviewed studies that clearly show an improvement in the health outcomes of severely injured patients who were transported by air. In the interest of time, we did not cite every study we are aware of; however, we will provide a full bibliography of such studies upon request.

McMullan JT, Hinckley W, Bentley, et al. Ground emergency medical services requests for helicopter transfer of ST-segment elevation myocardial infarction patients decrease medical contact to balloon times in rural and suburban settings. *Acad Emerg Med* 2012; 19:153-160

Stewart KE, Cowan LD, Thompson DM, Sacra JC, Albrecht R. Association of direct helicopter versus ground transport and in-hospital mortality in trauma patients: a propensity score analysis. *Acad Emerg Med* 2011;18:1208-16.

Sullivent EE, Faul M, Wald MM. Reduced mortality in injured adults transported by helicopter emergency medical services. *Prehosp Emerg Care*.2011;15:295-302.

Albright KC, Branas CC, Meyer BC, Matherne-Meyer DE, Zivin JA, Lyden PD, et al. ACCESS: acute cerebrovascular care in emergency stroke systems. *Arch Neurol* 2010;67:1210-8.

Bulger EM, Guffey D, Guyette FX, et al. Impact of prehospital mode of transport after severe injury: A multicenter evaluation from the Resuscitation Outcomes Consortium. *J Trauma* 2012; 72:567-575

Geerhart PA, Wuerz R, Localio AR. *Cost-effectiveness Analysis of Helicopter EMS for Trauma Patients*. *Annals of Emergency Medicine* 1997; 30: 500-506

Sullivent EE, Faul M, Wald MM. *Helicopter Emergency Medical Services Transport Is Associated With Reduced Mortality in Injured Adults*. *Prehospital Emergency Care* 2010; 14(Supp 1):7

Gerritse BM, et al. *Advanced Medical Life Support Procedures in Vitally Compromised Children by a Helicopter Emergency Medical Service*. *BMC Emergency Medicine* 2010, 10:6.

Davis DP. *Early Ventilation in Traumatic Brain Injury*. *Resuscitation* (2008) 76, 333-340.

Hartl R, Gerber LM, Iacono L. et al. *Direct Transport Within an Organized State Trauma System Reduced Mortality in Patients with Severe Traumatic Brain Injury*. *Journal of Trauma* 2006; 60:1250-1256.

III. THE AIR AMBULANCE FEE SCHEDULE

The Medicare Air Ambulance Fee Schedule was implemented in 2002 and phased in from 2002 through 2006 in a budget-neutral manner. Prior to the implementation of that schedule, hospital-based air ambulance programs were reimbursed for reasonable costs, while community-based programs were reimbursed for reasonable charges. The fee schedule provides fixed payment rates for both fixed-wing and rotor-wing air ambulances and differentiates between transports originating in urban and rural areas. However, the fee schedule does not differentiate between business models. Since the implementation of the fee schedules, Medicare payments for air ambulance transportation have remain fixed with the exception of annual inflationary increases that have averaged only 2 percent.

CMS Ambulance Inflation Factor (AIF) by CY

2012 2.4%
2011 -0.1%
2010 0.0%
2009 5.0%
2008 2.7%

2007 4.3%
2006 2.5%
2005 3.3%
2004 2.1%
2003 1.1%
2002 1.2%
Average 2.2%

IV. Cost Drivers and the Changing Landscape

When looking at the cost of doing business in relation to Medicare reimbursement, it must be remembered that like other ambulance services, air medical transport is only reimbursed for the mileage flown in transport of the patient (known as “loaded miles”). In many cases, the cost of unreimbursed miles flown to reach the patient is higher than the reimbursable loaded miles. That is particularly prevalent in the fixed-wing environment. There is no recognition of the cost of the medical care provided or the cost of maintaining readiness, i.e. maintenance, crew duty time, etc. There is also no recognition of the many times that a helicopter is dispatched along with a ground ambulance, only to find upon arrival the patient’s injuries do not warrant transport by helicopter, in which case the helicopter is returned without transport or reimbursement.

One must also consider the rapidly changing landscape of our population. According to the American Hospital Association (AHA), the over-65 population will nearly double by 2030 to over 58 million people. In addition, over 60 percent of the Medicare population will be managing more than one chronic health condition. Likewise, one in four will be living with diabetes and the soon-to-be over 65 “Baby Boomers” will require more health care services than any other American generation before them.

Reference: <http://www.aha.org/content/00-10/070508-boomerreport.pdf>

The air medical community will not be immune to the changing healthcare demands of an aging population.

V. Historical Costs

Overall costs can vary depending on a number of factors, including the type of aircraft used, medical supplies needed, and the ability to take advantage of bulk purchasing. However, in order to provide a fair and representative look at the rapid costs increases the air medical community has seen over the past several years, we will focus on several of the largest, and mostly uniform, cost centers for air medical programs. The following exhibits address areas including: aircraft purchasing (Appendix 1); data on the costs associated with specific types of aircraft that provide specialty care, fuel costs, medical crew salary costs, and safety enhancements (Appendix 2); data from the Air Medical Operators Association on aviation associated costs, including FAA required and recommended safety enhancements (Appendix 3); and Comparative Program Estimates for single-base, regional, and nation-wide Air Medical Programs (Appendix 4).

Appendix 1: Aircraft Costs:

Aircraft Bluebook Price Digest*

Year	Bell 430	Bell 407	Bell 206 L-4	EC135 P1	AS350 B2	Agusta 109 Power
2000	\$ 2,600,000	\$ 1,550,000	\$ 1,300,000	\$ 2,300,000	\$ 1,150,000	\$ 2,550,000
2001	\$ 2,700,000	\$ 1,600,000	\$ 1,350,000	\$ 2,500,000	\$ 1,200,000	\$ 2,650,000
2002	\$ 2,800,000	\$ 1,650,000	\$ 1,400,000	\$ 2,700,000	\$ 1,350,000	\$ 2,750,000
2003	\$ 2,900,000	\$ 1,700,000	\$ 1,450,000	\$ 3,100,000	\$ 1,400,000	\$ 2,850,000
2004	\$ 3,100,000	\$ 1,750,000	\$ 1,500,000	\$ 3,200,000	\$ 1,500,000	\$ 2,950,000
2005	\$ 3,400,000	\$ 1,800,000	\$ 1,550,000	\$ 3,500,000	\$ 1,600,000	\$ 3,200,000
2006	\$ 3,700,000	\$ 1,850,000	\$ 1,600,000	\$ 3,700,000	\$ 1,700,000	\$ 3,500,000
2007	\$ 4,000,000	\$ 1,950,000	\$ 1,700,000	\$ 3,800,000	\$ 1,800,000	\$ 3,700,000
2008	\$ 5,000,000	\$ 2,050,000	\$ 1,800,000	\$ 3,900,000	\$ 1,900,000	\$ 4,200,000
2009	NA	\$ 2,100,000	\$ 1,900,000	\$ 4,600,000	\$ 2,000,000	\$ 5,200,000
2010	NA	\$ 2,300,000	\$ 2,100,000	\$ 5,625,000	\$ 2,100,000	\$ 5,500,000

% Chg. 2000 to 2010 148.4% 161.5% 244.6% 182.6% 215.7%

*All data from the Winter 2011/2012 Volume 11-4



Appendix 2: Specialty Care Costs:

INCREMENTAL COSTS OF SPECIALTY CARE TRANSPORTS ANALYSIS																
Aircraft	Hull Value	Monthly Lease Rate %	Monthly Lease Payment	Annual Insurance Rate	Monthly Insurance Costs	Monthly Lease and Insurance (L&I) Costs	Annual (L&I) Costs	Incremental Larger Aircraft Costs	TTL Flights Per Month	TTL Flights Per Year	(L&I) Per Flt	% of Flts requiring Specialty Care Aircraft	# Spec Flts per year	Incremental Costs per Specialty Flt	Shortfall in Cost compared to \$6,200 payment	% Shortfall of Medicare Payment
<p>Some Specialty Care Flights, such as neonatal, pediatric, and OB may require aircraft that have capabilities greater than required for single patient transport. Capability may relate to aircraft interior space and power which translates into larger and more powerful aircraft (twin engine/twin patient space capabilities. Medicare has not paid based on the capability of the aircraft flown for any particular patient transport.</p> <p>Specialty Care Flights are estimated to be 5% of total Medicare Transport Volumes</p> <p>The average Medicare "allowable" charge for a helicopter (base rate plus mileage) is \$6,200/transport, as of 2010</p> <p>This worksheet attempts to quantify the incremental increased cost to provide the capabilities of a Specialty Care Flight, amortized over number of Specialty Care Transports</p> <p>Nothing in this worksheet is related in any way to the costs of Aviation Safety, all aircraft are presumed to meet FAA Standards and operate in a safe manner</p>																
Aircraft Costs Analysis																
Baseline 1	Bell 407 / ASur	1.20%	\$32,400	2.50%	\$5,625	\$38,025	\$456,300	N/A	35	420	\$ 1,086.4	5%	N/A	N/A	N/A	
Baseline 2	EC135	1.20%	\$66,000	2.50%	\$11,458	\$77,458	\$929,500	\$473,200	35	420	\$ 2,213.1	5%	21	\$22,533	\$16,333	263%
Baseline 3	EC145	1.20%	\$90,000	2.50%	\$15,625	\$105,625	\$1,267,500	\$811,200	35	420	\$ 3,017.9	5%	21	\$60,357	\$54,157	874%
<p>Notes:</p> <p>Baseline 1 is a single engine, single patient capable aircraft with two medical staff</p> <p>Baseline 2 is a twin engine, two patient capable aircraft with up to three medical staff</p> <p>Baseline 3 is a twin engine, two patient capable aircraft with up to four medical staff</p>																
Specialty Care Equipment and Training Cost Analysis																
<p>Specialty Care Transports may require specific, additional equipment and training to provide the appropriate level of care for the patient. The costs for that equipment and training can vary, depending on whether a hospital provides the medical team and equipment to a hospital-based program, or whether an independent operator provides both the training and equipment. That is why, in addition to the Aircraft Costs above, the equipment and training costs cover such a large range.</p>																
Specialty Care Annual Equipment Cost/Training (E&T)	TTL Flights Per Month	TTL Flights Per Year	(E&T) Per Flt	% of Flts that requiring Specialty Care Aircraft	# of Flts that requiring Specialty Care	Incremental Costs Flt Specialty Care	Average Medicare Payment	Incremental Cost over Medicare Payment	Incremental % Increase over Medicare Payment							
\$25,000	35	420	60	5%	21	\$1,190	\$6,200	\$ 7,390.48	19%							
\$50,000	35	420	119	5%	21	\$2,381	\$6,200	\$ 8,580.95	38%							
\$100,000	35	420	238	5%	21	\$4,762	\$6,200	\$ 10,961.90	77%							
\$200,000	35	420	476	5%	21	\$9,524	\$6,200	\$ 15,723.81	154%							

Fuel Costs:

Reference: <http://www.transtats.bts.gov/fuel.asp>
http://www.iata.org/whatwedo/economics/fuel_monitor/Pages/price_analysis.aspx
<http://www.globalair.com/airport/region.aspx>

According to the Research and Innovative Technology Administration, Bureau of Transportation Statistics, the month over month cost for Jet Fuel for Major Air Carriers was observed from January 2000, and is reported until January 2012. This fuel cost has increased from \$0.69 in 01/2000 to \$2.96/gal in 1/2012, and is reported through March, 2012 by the International Airline Transport Association and Platts Fuel as being \$3.28/gal in North America. This is the reporting of fuel costs for **Scheduled Air Carriers**. It is important to note that Air Medical Operations are **Non-Scheduled On Demand Air Carriers**. **On demand** operations frequently require fueling at less than optimal prices in varying and often remote locations where fuel prices may range to double those reported prices for **Scheduled Air Carrier** operations. As smaller purchasers in economic size and ability, most Air Medical operators are unable to take advantage of bulk purchasing, hedge purchasing, or other strategies that large Scheduled Air Carriers are able to undertake. In addition, air medical aircraft often must refuel at smaller and more remote airports where fuel costs are generally higher than average.

As an example, Globalair.com’s quote for US Average Full Service Jet A (Fuel bought from Airport Fixed Base Operators) for April 11, 2012 is \$5.91/gal and ranges in regional pricing that week from \$5.41 in the Central US, to \$6.14 in the Eastern US, and \$6.31/gal in Alaska. That is reflective of the significant price differences between **Scheduled Air Carriers** who can avail themselves of bulk purchasing at fixed points of delivery and sale, versus **Non-Scheduled On Demand Air Carriers** that must access fuel when they require it and where they require it, which is difficult to predict.

Medical Crew Salary Costs:

Reference: 1. Greene, M. J. (September-October 2010). 2010 Critical Care Transport Workplace and Salary Survey. *Air Medical Journal* , 222 - 235.
 2. Rau, W. (Sept/Oct 2000). 2000 Medical Crew Survey. *AirMed*, 17-22.

Two air medical salary surveys were conducted 10 years apart and published in industry trade journals. The results for primary clinical staff are summarized below with key findings that salaries have increased over the past decade 57% for paramedics and 129% for registered nurses. The highest region is the Pacific Northwest (AK, CA, HI, NV, OR, WA) and the lowest region is the Southeast Gulf states (FL, GA, NC, SC, VA, WV).

	RN Annual Range	RN Annual Midpoint	Paramedic Annual Range	Paramedic Annual Midpoint
2000	\$30,000 - \$50,000	\$40,000	\$25,000 - \$50,000	\$37,500
2010	\$53,808 - \$130,000	\$91,904	\$35,216 - \$83,200	\$59,208

Percent Change	79.36% - 160.00%	129.76%	40.86% - 66.00%	57.89%
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- Reference:**
1. Milliman. (2008). *Northwest Healthcare Industry Salary Survey*. Milliman.
 2. Milliman. (2011). *Northwest Healthcare Industry Salary Survey*. Milliman.

Further evaluation of the Pacific Northwest, which has trended as the air medical industry high for RN salaries, demonstrates an hourly pay increase of over 9% for the period of 2008 – 2010 for all Acute Care RNs according to Milliman, a Human Resource consulting firm.

	RN Acute Care Hourly Range	RN Acute Care Hourly Weighted Mean
2008	\$24.09 – \$40.18	\$34.09
2010	\$26.33 – \$45.35	\$37.37
Percent Change	9.30% - 12.87%	9.62%

Nurses that work in the air medical environment require a high skill level due to the complexity of the patient population. The average flight nurse is over 40 with many years of experience placing them in the top pay percentiles. Ongoing education and skills verification is essential averaging 148 hours per year at a cost of over \$5,400 per nurse (Greene, September-October 2010). The requirements for highly experienced nurses and extensive ongoing education makes air medical programs very vulnerable to escalating personnel costs with little opportunity to employ cost containment measures without risk to the quality of care and service availability.

Safety Enhancement Costs

- Reference:** http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=11957

According to the FAA’s October 2010 release, numerous initiatives have been made by the FAA to improve helicopter air ambulance safety, including the following:

1. *Risk Assessment Programs*. In 2005, “the FAA issued guidance (Notice 8000.301 Operational Risk Assessment Programs for Helicopter Emergency Medical Services) to inspectors promoting improved risk assessment and risk management tools and training to all flight crews, including medical staff.” The program costs of compliance include the initials costs to put compliant risk assessment/management programs together, the on-going training costs for all personnel and the costs of monitoring, collecting, analyzing, reporting and following up on information gathered.
2. *Air Medical Resource Management (AMRM)*. In 2005, “the FAA issued guidance to operators (AC No. 00-64 Air Medical Resource Management) establishing minimum guidelines” for AMRM training and included training for pilots, maintenance technicians, flight nurses and paramedics, flight physicians, medical directors, specialty team members, communications specialists, program managers, and other team members. The program costs of compliance include the initials costs to put compliant AMRM programs together, the on-going training costs for all personnel and the costs of monitoring, collecting, analyzing, reporting and following up on information gathered.

3. *Special Emphasis Inspection Program.* In 2005 “the FAA issued revised standards for inspection and surveillance of air ambulance operators, with special emphasis on operations control, risk assessment, facilities and training, especially at locations away from the certificated holder’s principal base of operations.” The program costs include the various costs of compliance with the new areas of special emphasis.
4. *Loss of Control (LOC) and Controlled Flight Into Terrain (CFIT).* In 2006, “the FAA issued a handbook bulletin to inspectors describing acceptable models for LOC and CFIT avoidance Programs,” clarifying the existing guidance (HBAT 06-02 Helicopter Emergency Medical Services (HEMS) Loss of Control (LOC) and Controlled Flight Into Terrain (CFIT) Accident Avoidance Programs). The program costs of compliance included the initial and on-going costs of meeting the clarified guidance.
5. *HBAT 06-01 and OpSpec A021.* In 2006, “the FAA issued revised guidance to inspectors regarding HEMS OpSpecs, amending the Visual Flight Rule (VFR) weather requirements for HEMS operations, including consideration of the adverse effects of reduced ambient lighting at night and mountainous terrain (HBAT 06-01 Helicopter Emergency Medical Services; OpSpec A021/A002 Revisions). The program costs of compliance with the revised OpSpec A021 were considerable, far-reaching, and on-going.
6. *Guidance to Part 142 training centers.* In 2006, “the FAA issued a Notice to Training Center Program Managers assigned to oversee Part 142 training Centers advising them of recent changes to air ambulance operations and training standards (Notice 8000.317, Operator Training Provided by Part 142 Training Centers for Helicopter Emergency Medical Services).” The program costs of this initiative generally included increases costs of training to the revised standards.
7. *Public air ambulance operators.* In 2006, “the FAA issued guidance to inspectors on the surveillance and oversight of public aircraft operators for air ambulance operations (Notice 8000.318 Public Helicopter Emergency Medical Services (HEMS) Operations).” This initiative likely resulted in increased compliance costs for public providers of HEMS.
8. *Terrain Awareness and Warning Systems (TAWS).* In 2006, a special committee developed standards for Helicopter TAWS (H-TAWS). Early compliance with these standards was particularly expensive and availability of equipment meeting the standard was severely limited.
9. *Operational Control Centers.* In 2008, the FAA “issued an advisory circular (AC 120-96) highlighting the ‘best practices’ for use by air ambulance operators in establishing their control centers and training their specialists.” Program costs of compliance include the initializing, equipping and staffing of operational control centers, as well as on-going training, staffing and equipment costs.
10. *Operations Specifications.* In 2008, “the FAA published a Notice in the Federal Register that advised operators of important mandatory changes to air ambulance flights...including a provision to encourage the use of NVGs and Terrain Awareness Warning Systems.” “All air ambulance operators will comply with Part 135 weather minimums, including repositioning flights with medical crew onboard.” Flight crews were also required to begin determining a minimum safe altitude and obstacle clearance for each flight. Significant costs of compliance for programs to meet this Notice by February 22, 2009.

11. *Night Vision Goggles*. The FAA has initiated and written minimum standards for NVGs/cockpit lighting and “revised the NVG guidance in the Operations Inspectors Handbook, Order 8900.1.” While not mandated at this point, NVG use adds considerably to program costs through cockpit modification, initial and on-going training for all NVG users, the initial cost of the goggles, and the regular maintenance and calibration costs for each set of goggles.
12. *Flight Data Recorders (FDRs)*. The FAA does not currently require FDRs for air medical operations, but is looking at future rule-making efforts to require them. Program cost of compliance includes the cost of the units and installation, monitoring systems and personnel, tracking, analysis and follow-up, as well as integration into existing Safety Management and Quality tracking systems.

**Appendix 3: AMOA Cost Model:
Aviation Associated Costs, Including Required and Recommended Safety Enhancements**

The Air Medical Transport Industry is committed to providing safe, effective medical transport for patients in need. The Air Medical Operators Association (AMOA) provides the following response to AAMS on the economic impact associated with currently required and recommended safety policies, procedures and equipment. This report also includes fixed aviation cost estimates. The following cost estimates are in no way intended to conflict or compromise our support of these items or their continued use to improve the safety of our programs.

Some of these items are currently required to perform the mission, such as an aircraft, a completed medical bay to provide medical care, and basic instrumentation for visual flight rules (VFR) flight. Other items, such as Operations Control Centers (OCC's) and Helicopter Terrain Alert Warning Systems (HTAWS) will likely be required in the near future based on the Federal Aviation Administration's Notice of Proposed Rulemaking on Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments (NPRM). This NPRM, released in 2010, is scheduled for Final Rule in August, 2012. The evaluation released with the NPRM is titled as follows:

Air Ambulance and Commercial Helicopter Operations, Part
91 Helicopter Operations, and Part 135 Aircraft Operations;
Safety Initiatives and Miscellaneous Amendments
NOTICE OF PROPOSED RULEMAKING
(14 CFR PARTS 1, 91, 120, AND 135)
Office of Aviation Policy and Plans
Operations Regulatory Analysis Branch, APO-310
April 1, 2010

All references to the "FAA Evaluation" refer to this document unless otherwise noted.

Finally, there are additional safety items, such as Night Vision Goggles and an active Safety Management (SMS) Program, that, while not currently required or a part of the NPRM, are considered by industry-wide consensus to be a vital part of the safe operation of an air medical service. These items are supported by the industry and are considered essential for the reasons specified in the narrative that accompanies these estimates.

Many of the following items are based on the FAA's estimation of the economic impact of the proposed requirement; some of those estimations require updating based on market costs, and others based on the over or under estimation by the FAA. Other costs are based on industry data.

Required Items and Associated Costs

Aircraft, Instrumentation, Fuel Costs and Medical Completion

Not all helicopters are suitable for the air medical mission. Aircraft must be large enough to accommodate the pilot, at least two medical crewmembers, and at least one patient. The aircraft must also be equipped with the proper instrumentation, the proposed medical equipment, and any

other modifications that help ensure safe flight and the range of patient care that may be required.

Aircraft are not purchased so equipped- they are bought "green" with the minimum of instrumentation, pilot controls, and no medical equipment. Those aircraft are then taken to "completion." Completion is often performed at a separate facility and by a completely different company, adding to the basic aircraft the items necessary to enhance safe flight and perform the medical mission.

There is a range of aircraft that are completed in this fashion and are able to perform this mission. The total cost of completion can vary widely based upon the size of the aircraft and the various types of missions these aircraft, and the medical personnel on board, will be expected to perform. However, the industry estimates that the average total costs of HEMS aircraft are as follows:

Item	Industry Estimate
Cost of average "Green" Aircraft	\$3,525,000
Cost of Completion	\$1,250,000
Fuel Costs (\$5.00 per gallon @ 60 gallons per hour)	\$300 per hour
Insurance Per Year	\$120,000
Maintenance Costs	\$600 per hour

Safety Training with Simulation

Pilot training is essential; pilots are trained and tested semi-annually and are expected to perform certain tasks in order to pass both FAA mandated check rides and meet various internal company standards. Training is often considered the most essential component of an operator's safety program, and is often used to augment other portions of the operator, such as training conducted under night vision goggles (NVG's).

Training is widely considered most effective when performed in training simulators; training in actual aircraft is also preferable. Simulators can provide a more cost effective way to train individual pilots and can provide training in certain situations that may be unsafe in the aircraft itself.

In either situation, this semi-annual training is not without its own significant costs, and must be estimated as part of the currently required portion of an operator's safety program. The FAA requires 40 hours of training (either by simulator or actual instrument flight time) in order to receive and remain current on an instrument rating. For cost estimation purposes, we will assume all 40 hours are completed by simulator*. Cost of training during flight will vary based upon the aircraft being flown and the nature of the training. Actual flight training may or may not be more costly than simulator training:

Item	Industry Estimate
Cost of 1 Hour Simulator Training **	\$1,815.00
Frequency	4 annual 10 hour sessions
Number of HEMS Pilots	3,090
Total:	\$224,334,000

* (It is important to note that less than half of the EMS pilots retain their instrument currency and not all receive all or some of their training on simulators)

** (Estimate based on costs provided by the University of North Dakota)

Pilot and Mechanic Hiring and Retention

Helicopter pilots are a highly specialized and highly demanded workforce. Initial training for pilots is an enormous expense, and most often conducted as part of military training. Commercial pilot training can cost upwards of \$75,000.00 depending on the type of training.

Adding to that are the high standards for initial hires in air medical transport. Most operators require more than 1,000 hours of flight time for new pilots; some are more than twice that. This level of experience is necessary in the sometimes highly demanding type of aviation required of helicopter EMS pilots.

This is also true for aircraft mechanics, who are also a highly skilled and highly trained but limited workforce.

The FAA estimates that helicopter pilots receive \$48 per hour (this includes benefits); at 40 hours per week that equals \$99,840. We must then multiply the total by the number of HEMS pilots the FAA estimates is currently in the fleet (3,090). We must then do the same for mechanics, who earn an estimated \$37.50 per hour including benefits.

The costs associated with hiring and retaining pilots of this type are as follows:

Item	Industry Estimate
Pilot Salary (includes benefits)	\$99,840
Mechanic Salary (includes benefits)	\$78,000
Number of HEMS Pilots (FAA Estimate)	3,090
Number of HEMS Mechanics (Industry Estimate)	1,300
Total:	\$409,905,600

Items Likely Required in Future Rulemaking

The following items, as previously discussed, are part of the Federal Aviation Administration's Notice of Proposed Rulemaking on Air Ambulance and Commercial Helicopter Operations, Part 91 Helicopter Operations, and Part 135 Aircraft Operations; Safety Initiatives and Miscellaneous Amendments (NPRM). As part of that NPRM process, the FAA estimated the economic impact these additional required items would have on the air medical industry.

We are proud to point out that all of the requirements proposed in the NPRM, and noted here, are supported fully by the air medical transport industry and many are already a part of operations. The FAA reported the following estimates in their 10 year summary of these costs:

Proposed Item	FAA Estimate (10 years)	Industry Estimate (10 Years)
Operational Control Centers	\$91,008,000	\$279,003,600
HTAWS	\$48,461,000	\$172,679,400
Additional Flight Planning Requirements	\$14,518,520	\$14,518,520
Risk Analysis	\$29,247,280	\$29,247,280
Safety Training	\$8,123,940	\$8,123,940
Light Aircraft Recording Systems	N/A	\$187,972,950

Where the industry agrees with the FAA assessment of the financial impact, we have not made additional comments. Where we feel these estimates are not accurate, we have provided an increased estimate above and a more thorough examination of those costs and some explanation of the necessity of these enhancements below.

Operational Control Centers

Operational Control Centers are a vital part of maintaining aviation safety on air medical missions. Numerous aspects associated with OCC's must be considered when assessing the cost.

- Location costs - these costs are associated with the physical location of the OCC; they include the costs of the actual facility and any related utility and / or maintenance costs.
- Communications Equipment - for "two-way communications" requirement, some or all of the following equipment would be necessary:
 - Additional radio repeaters and additional repeater leases.
 - Satellite phones designed for aviation use; this cost would include the purchase of the equipment, its installation and approval, time out of service for that installation and approval, and any ongoing maintenance of the equipment.
 - Voice over internet protocol (VOIP) services and software.
- Computer Equipment - as the FAA indicated, computers and monitors are required to view tracking information, weather, etc.
- Satellite tracking - the cost of equipping aircraft with tracking devices, including purchase, installation, time out of service, maintenance, as well as additional and ongoing service fees.
- Off-Site data recovery location- in case of hardware failure.
- Off-Site continuity - a backup facility to ensure continued operation.
- Weather reporting software - software to provide updates on weather.

All of these factors must be considered when discussing the estimated costs of developing and implementing an OCC. The following breakdown reflects these costs as estimated by the FAA and revised by industry estimates. ** Please note that the OCC Specialist hourly rate includes benefits and the installation of satellite tracking software includes time out of service.

Cost of building and equipping an Operational Control Center

Proposed Rule	FAA Estimate	Industry Estimate
Communications equipment	N/A	\$1,152,000
Computer equipment	\$1,152,000	\$1,152,000
Satellite tracking equipment X 989	N/A	\$9,890,000
Installation incl. time out of service (10 days) at \$12,000 (cost per day) X 989 Aircraft	N/A	\$118,680,000
Software (development, 1st year)	N/A	\$2,000,000
Total Initial Installation Costs:	\$1,152,000	\$132,874,000
Location costs (per year)	N/A	\$36,000
Software Maintenance (per year)	N/A	\$200,000
Total Recurring Costs (10 years):	N/A	\$2,360,000

Cost of Hiring, Training, and Retaining Operations Control Specialists

Proposed Rule	FAA Estimate	Industry Estimate
Number of OCC Specialists (new)	144	144
Salary per hour (including benefits)	\$30	\$48
Number of hours per year	2080	2080
Total costs: (144 X \$30 vs. \$48 X 2080)	\$8,985,600	\$14,376,960
Total Staffing Costs (10 Years):	\$89,856,000	\$143,769,600

HTAWS

The following estimation is based on an update to the FAA's economic evaluation of requiring HTAWS in the HEMS fleet. Installation costs for HTAWS, on average, would be approximately \$16,000 (in addition to the \$35,000 for purchase of the actual device). Further, we must estimate costs to continually update the HTAWS mapping database- essential in helicopter TAWS models, which costs an estimated \$400 annually and would begin as soon as the device is installed (included in the first year cost, but not included in subsequent years).

Cost to helicopter air ambulance operators to install (HTAWS)

Proposed Rule	FAA Estimate	Industry Estimate
Helicopter air ambulances	989	989
Unit cost to equip with HTAWS (includes equipment and installation)	\$35,000	\$51,000
Time out of service	2 days	10 days
Out of service cost per day	\$7,000 per day	\$12,000 per day
Software updates (per year)	N/A	\$400
Equipment and installation cost		
Cost: (989 X \$35,000) vs. (989 X \$51,000)	\$34,615,000	\$50,439,000
Time out of service cost		

Cost: (989 X \$14,000) vs. (989 X \$120,000)	\$13,846,000	\$118,680,000
Total costs:	\$48,461,000	\$169,119,000
Annual software update		
Cost: 989 X \$400	N/A	\$395,600
10 year total with 9 years of software updates:	\$48,461,000	\$172,679,400

Light Aircraft Recording Systems (LARS)

Installation of (LARS) systems and their use both in accident investigation and, more importantly, flight operations monitoring is a key component in air medical safety. In addition to the device, and in order to achieve the full benefits that these systems would provide, an operator must install the equipment, purchase and maintain the software and/or monitoring system, and most importantly, develop and staff a system to monitor that data.

We estimate that a device currently on the market that would meet the FAA's expected recording parameters would be estimated at \$25,000 with an additional \$11,000 required for installation. Additionally and as previously noted, the installation must be approved by FAA officials and that approval can take several additional days. On average, we estimate that 10 days are spent out of service before the aircraft can resume operations. These costs are based on estimations provided in a survey of air medical operations and based on actual installations.

The costs for the analysis software and the initial and recurring costs of the ongoing data analysis are far more significant. These costs require full time employees trained to analyze the data and operate the equipment used to do so; additionally, a portion of the aviation management's time must be dedicated to the analysis of that data.

We must estimate, based on current industry practice, that for every 30 aircraft, at least 1 data analysis position will be required. Given the cost of labor for OCC specialists, we estimate that a similar salary plus benefits (\$48 per hour with 2080 hours) would be required. Additionally, training similar to that given an OCC specialist is necessary.

One-time cost to helicopter air ambulance operators to install LARS

Item	Industry Estimate
Helicopter air ambulances	989
Unit cost to equip with LARS (includes equipment and installation)	\$36,000
Time out of service	10 days
Out of service cost per day	\$12,000
Cost: (989 X \$36,000) + (989 X \$120,000)	\$154,284,000

Cost for LARS software

Item	Industry Estimate
Helicopter air ambulances	989
Cost for FDM software	\$750
Cost= 989 X \$750	\$741,750

Cost to helicopter air ambulance operators to establish procedures to evaluate, analyze, and use LARS data

Items	Industry Estimate
Number of LARS Specialists (new)	33
Salary per hour (includes benefits)	\$48
Number of hours per year	2080
Cost Per Year:(33 X \$48 X 2080)	\$3,294,720
Total Salary and Benefits for LARS Specialists (10 years):	\$32,947,200

Considered Necessary for Safe Conduct

Two items essential to safety in air medicine were not included in the NPRM; Safety Management Systems (SMS) and the use of Night Vision Goggles (NVG's). These items are expected to be a part of future rulemaking for Part 135 operations and HEMS operators, respectively. Since there is no FAA estimation, we have provided those here, and listed the total in summary below:

Proposed Item	Industry Estimate
SMS Implementation + Ops (1 st year)	\$7,620,245
SMS Operations each additional year	\$4,495,005
NVG Implementation + Ops (1 st year)	\$185,437,500
NVG Operations each additional year	\$2,076,900
Total Implementation & Ops (10 Years)	\$252,204,890

Safety Management Systems

Safety Management Systems (SMS) are an essential part of each air medical service operation. While initially considered to be specific to aviation operations, SMS permeates nearly every facet of the air medical operation. We believe, as does the FAA, this permeation is a natural progression of the SMS program, and greatly enhances safety on every level as well as overall patient care.

The FAA has released several proposed rules on the topic of SMS, however, these proposals currently affect only Part 121 Scheduled operations. While those operations are quite different from air medical operation (conducted under Part 135), the SMS systems air medical operators employ are modeled directly off of the systems employed by Part 121. Therefore, we can analyze and understand the costs of an SMS system in air medical operations based on the economic evaluation used for Part 121 operations, since all of the components are the same.

It should be noted that the FAA expects to extend the SMS requirement to Part 135 operations in the near future, and is expected to require the same components.

The FAA defines the necessary portions of an SMS program as the following:

- **Development and Documentation** - Under an SMS a carrier would be required to establish and document a safety policy that outlines the policy and objectives of the

company. Although much of the information would depend on a carrier’s specific operation and size, all carriers would need to document the following: implementation plan, commitment to safety management and objectives, designation of responsibilities of an accountable executive and management representative, and a coordinated emergency response plan. Carriers also reported recurring costs for document updates since SMS is a management system that evolves with the company.

- **Implementation and Operating Cost** - Safety risk management, safety assurance, and safety promotion are the operational parts of an SMS. Safety risk management deals with the identification, analyzes and mitigation of hazards whereas safety assurance is a way to monitor and evaluate to make sure risk controls are sufficient and effective. In addition, safety promotion deals with communicating and training relevant employees on important safety information and SMS procedures. Costs under this section include:
 - **Equipment/Software:** Required equipment or software to modify an existing system for reporting, storing, and analyzing data.
 - **Staff:** The SMS requirements could result in additional staffing. Larger carriers and some of the organizations that represent smaller carriers reported needing approximately 0 to 6 new full-time staff members to identify, collect, track, and analyze data plus audit their progress, and promote safety.
 - **Training:** Carriers, within the first 3 years, would be required to provide training to all employees that have an active role in SMS.
 - **Safety Promotion:** Under SMS, a carrier would also be required to communicate information concerning safety issues.

In order to evaluate these costs in terms of an air medical provider, we divided the total costs provided by the FAA by the number of aircraft they were being required for, and then multiplied that per aircraft average by the FAA's estimate of aircraft in the HEMS fleet.

Proposed Item	Part 121 Estimate
Development/ Documentation (ongoing)	21,500,000
Implementation	17,400,000
Operating Costs (ongoing)	20,000,000
Training (ongoing)	17,300,000
Number of Part 121 A/C	7,307
Total Cost per Aircraft (Implementation)	\$7,705.00
Total Cost per Aircraft (Operation)	\$4,545.00
Total HEMS Cost (Implementation)	\$7,620,245
Total HEMS Cost (Operation)	\$4,495,005

Night Vision Goggles and NVG Operation

Air medical transport operations continue to improve and enhance the safety of operations through the implementation of new technology. As part of this continuous enhancement, air medical operations remain unanimous in their support of night vision imaging systems to

enhance the safety of operations in the night VFR environment. Industry organizations cooperated in a statement to the National Transportation Safety Board (NTSB) before their 2009 Public Hearing on air medical transportation safety in support of a requirement to utilize NVG's during night Visual Flight Rules (VFR) operations. In addition to that recommendation, our organizations have, in separate responses to the recent FAA Notice of Proposed Rulemaking (NPRM) for Helicopter Emergency Medical Services (HEMS), recommended to the FAA that they require NVIS for night VFR operations.

Item	Industry Estimate	Total Cost
Each NVG	\$12,500	
Equipping A/C for NVG Operation	\$30,000	
NVG Maintenance (per year, per NVG)	\$700 (per year)	
Time out of service	10 days	
Out of service cost per day	\$12,000 per day	
NVG Total: (3 NVG's per A/C x 989 A/C)		\$37,087,500
Out of Service (\$120,000 x 989 A/C)		\$118,680,000
A/C Equip Total: (\$30,000 x 989)		\$29,670,000
Implementation Total:		\$185,437,500
NVG Mntc. Total (3 NVG's x 989 A/C)		\$2,076,900

Totals Cost of Industry Enhancements

Item	Total Cost
Total Cost of Industry Enhancements (10 years)	\$943,750,580

Appendix 4: Comparative Program Estimates:

Impact of Medicare Air Medical Reimbursement Rates on Independent Operators		
Annualized Basis		
<u>Single Base/Single Helicopter Program - Semi-Rural Market</u>		
Direct Operating Expenses	\$ 2,300,000	
General & Administrative Expenses	<u>\$ 500,000</u>	
Total Program Costs	\$ 2,800,000	
Total number of Transports	360	
Costs per Transport	\$ 7,778	
Number of Medicare Transports	120	33% of Transports
Average Medicare Reimbursement/Transport	\$ 5,700	
Less Costs per Transport	<u>\$ 7,778</u>	
Net Loss Per Medicare Transport	<u>\$ (2,078)</u>	
Cummulative Loss for Medicare Transport	\$ (249,333)	9% of Program Costs
<u>10 Base Regional Program - High Cost West Coast Market</u>		
Direct Operating Expenses	\$ 38,500,000	
General & Administrative Expenses	<u>\$ 5,700,000</u>	
Total Program Costs	\$ 44,200,000	
Total number of Transports	3,200	
Costs per Transport	\$ 13,813	
Number of Medicare Transports	500	16% of Transports
Average Medicare Reimbursement/Transport	\$ 5,700	
Less Costs per Transport	<u>\$ 13,813</u>	
Net Loss Per Transport	<u>\$ (8,113)</u>	
Cummulative Loss for Medicare Transport	\$ (4,056,250)	9% of Program Costs
<u>170 Base Nationwide Program - Operating in 26 states</u>		
Direct Operating Expenses	\$347,802,000	
General & Administrative Expenses	<u>\$ 55,900,000</u>	
Total Program Costs	\$403,702,000	
Total number of Transports	45,500	
Costs per Transport	\$ 8,873	
Number of Medicare Transports	14,100	31% of Transports
Average Medicare Reimbursement/Transport	\$ 5,700	
Less Costs per Transport	<u>\$ 8,873</u>	
Net Loss Per Transport	<u>\$ (3,173)</u>	
Cummulative Loss for Medicare Transport	\$ (44,733,257)	11% of Program Costs
Notes:		
The \$5,700 average Medicare reimbursement is a mix of both rural and urban rates.		
The relative percent mix of Medicare transports can vary between 15-30%+ of total transports.		
The relative percent mix of Medicare transports is increasing by 7-22% year on year and will continue to do so as the population of boomers continue to grow in the Medicare pool.		
The cumulative loss on Medicare Transports averages 10% of total program costs, which money could be invested in safety initiatives and reduce the amount of costs shifted to commercial insurance programs.		

VI. Conclusion

AAMS appreciates the opportunity to provide input as MedPAC examines the Medicare Air Ambulance Fee Schedule. It was our intention to demonstrate the numerous and varied costs that are incurred in the safe and efficient operation of an air medical program.

The cost structure of an air medical operation can be complicated and vary widely based upon a number of variables. The data we presented here was intended to represent our industry through published literature and the real-world experiences of our members. When looking at specific programs, it is possible you will find some higher or lower costs than we listed here. We did not address other fixed costs of doing business, many of which apply to air medical providers overseeing multiple bases. Costs such as maintaining the physical infrastructure at the bases, the requirement for spare aircraft and capabilities, and the maintenance of back-up aircraft are not included in our averages. In addition, our averages do not address all the geographic disparities that have a wide effect on the costs of operations. Operations in larger states such as California and New York will see considerably higher costs than operations in smaller, less regulated states.

While costs can vary widely, it cannot be disputed that the most expensive and most common cost drivers have risen much faster than is accounted for in the inflationary updates of the Medicare Fee Schedule. The impact of those costs and the significant difference that exists between costs and reimbursements is magnified in rural areas where programs must deal with factors such as, lower volumes, longer travel distances, and the inability to take advantage of economies of scale. Costs per transport are a direct reflection of the volume of transports, since many of those costs are fixed. The rural modifier is what has allowed Air Medical Transport Programs to expand into rural areas, with lower volumes, which has increased the access to critical care services across our nation. The proposed changes to the rural modifier program will cause more zip codes to be counted as urban, putting additional pressures on those programs serving rural areas outside of major urban markets. We think the current “hold-harmless” agreement that establishes the rural modifier should remain intact and be made permanent. Programs, regardless of business model, cannot continue to absorb increasing costs without an increase in revenues and reimbursements. If costs continues rise more rapidly than reimbursements, every Air Medical Program, like any other business, will reach a point where sacrifices will be made or they will cease operations. Unfortunately, those sacrifices may have direct effects on the margins of operational safety or result in a reduction of available services, which will negatively impact patients who rely on our services for access to critical life-saving medical care – precisely what we are trying to avoid.

Thank you, again. We look forward to continued dialogue as your analysis moves ahead and stand ready to provide any additional assistance you may require. Please contact us if there is anything else we can provide for you.