

# Evolution of Hermann Life Flight in Houston

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## Abstract

### Figure 1

BK117 helicopter



### Figure 2



Hermann Life Flight was one of the earliest air medical programs started in the United States and remains one of the oldest life flight programs still in existence. Its inception in the mid 1970s provided transport for critically injured patients in the metropolitan area of Houston in addition to the outlying counties, which would otherwise have required extended ground ambulance transport time. During its years

of operation Hermann Life Flight has provided helicopter services for a city that has grown to over four million citizens and fixed wing transport to destinations around the world. It is one of the busiest hospital-based air emergency medical services in the United States with over 60,000 patient missions flown.

### Figure 3

Houston by night from the helicopter



Historically, air medical transport began during the Korean conflict as a means of rapid transport from the battlefield to front line hospitals for surgical intervention. Helicopters of this time period were not designed to transport patients inside the aircraft, therefore treatment was not provided en route. Their utilization for transport however was a major factor in decreasing the mortality rate from 4.5 deaths to 2.5 deaths per 100 casualties. These numbers decreased during the Vietnam War to less than 1 death per 100 casualties with the advent of helicopters capable of transporting patients inside the cabin of the aircraft in addition to medics administering treatment en route to definitive care. The use of rotorwing aircraft in the civilian sector was not utilized by any country until the Europeans initiated its use in the mid 1960s. The United States helicopter utilization was

predominately law enforcement until the early 1970s when the evolution of emergency medical services initiated a new trend in prehospital care.

Hermann Life Flight was the first civilian emergency air ambulance service in Texas and one of the first in the country. Deputy Chief L.O. "Whitey" Martin of the Houston Fire Department and Dr. James "Red" Duke began the program in 1976 in an effort to facilitate rapid transport in Houston and the surrounding communities. Dr. Duke completed a general surgery residency at Parkland Medical Center in Dallas, Texas in the early 1960s, then relocated to Houston to work at Hermann Hospital where he remains the medical director of the flight program and approves the protocols for which the medical crew operate under.

The program started out with one Alouette helicopter, a pilot who was military trained, a registered nurse who was designated leader of the crew, and a surgical resident who assisted the nurse with medical procedures and care of the patient. There were approximately eighty flights in the first six months of operation which rapidly increased to fifty flights per month. The sudden increase in volume made it necessary to add an additional helicopter and flight crew to the program.

By the early 1980's, the popularity of the helicopter for use in rapid transport was enormous. Hermann Life Flight began using Twin Star helicopters and developed two satellite bases in Beaumont and Galveston. By 1988 helicopter transport advanced in the United States and in keeping up with the national trend, Hermann Hospital purchased three BK117 helicopters. The new BK 117 was convenient as a rear load helicopter with enough room to transport and care for two patients in addition to providing room for the medical flight crew. Currently there are three BK 117 helicopters that provide services for Houston and it's surrounding counties with an average of three hundred flights per month. The helicopters are stationed at strategic points around the metropolitan area to provide rapid response times to outlying areas within a 150 mile radius from each base. One helicopter is located centrally at Hermann Hospital in the medical center, one in northern Harris county at Hooks Airport, and one in the south in Galveston County at Clover Field Airport with flight crews available at each location twenty four hours a day.

**Figure 4**

Rear load helicopter with enough room to transport and care for two patients in addition to providing room for the medical flight crew



**Figure 5**



The first use of the helicopters during a local disaster was in the early 1990's when the Phillips 66 refinery plant in Pasadena, Texas exploded causing several casualties, and then again several years later when an explosion occurred in Brenham, Texas. Pasadena was an eight to ten minute flight from Hermann Hospital which was and remains a Level One Trauma Center in addition to having the only regional burn center. The disaster plan Life Flight had developed was implemented for the first time and was put to the test. The first helicopter on the scene secured a landing zone and the flight crew developed a triage area as per protocol. The remaining helicopters transported patients until the area was cleared, then the first helicopter moved to a location away from the disaster site to stand by for any further injuries until

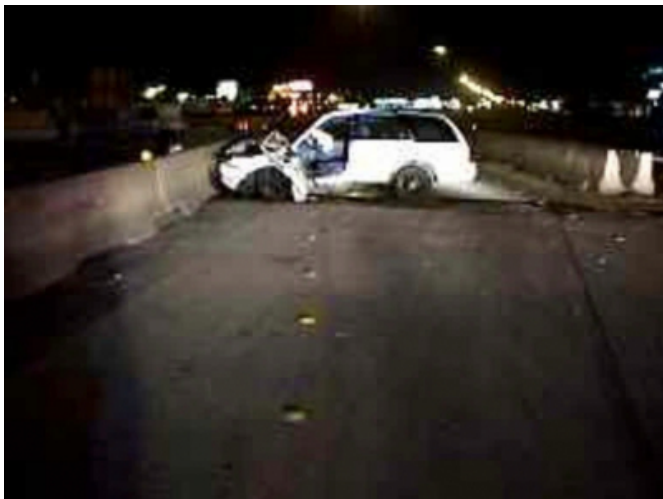
the area was completely secured.

The next disaster Life Flight responded to was the Brenham explosion where an underground storage tank for natural gas exploded and caused several casualties. Life Flight was called out once again to respond to a disaster situation and continued to use the original disaster plan that had worked during the Phillips 66 explosion. The difference between the Brenham explosion and the Pasadena explosion was the flight time for the helicopters. Brenham was a twenty five minute flight from Houston so the victims were transported by ground to the hospital in Brenham, then transported by helicopter to Hermann Hospital. The response time currently would be more rapid due to the location of the bases around the city.

Disaster and industrial accidents account for a very small percentage of the flights that Hermann Life Flight has responded to during its history. Statistics on the flights over the last five to six years show approximately seventy percent scene responses and thirty percent interfacility transports. Of the scene flights, fifty to sixty percent are motor vehicle accidents with the remaining percentage a variety of gunshot injuries, penetrating wounds, falls, burns, and industrial accidents.

**Figure 6**

Of the scene flights, fifty to sixty percent are motor vehicle accidents



**Figure 7**



**Figure 8**

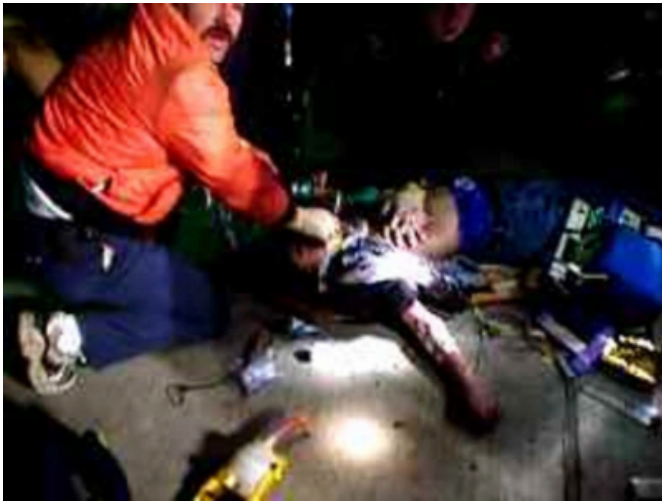


The flight crew has changed somewhat in recent years due to the changing economics in the health care system and the decrease in the availability of surgery residents. The current crew consists of the pilot and a registered nurse as before, with the addition of a flight paramedic. The nurse and paramedic work together to provide immediate stabilization of the patient in preparation for transport to the hospital. Both medical personnel are trained in basic cardiac life support, advanced cardiac life support, pediatric life support, and basic trauma life support.



**Figure 9**

Medical personnel are trained in basic cardiac life support, advanced cardiac life support, pediatric life support, and basic trauma life support

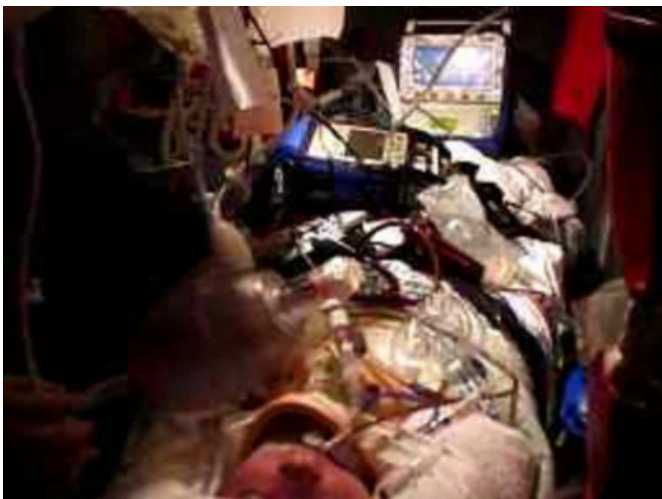


**Figure 11**

The nurse and paramedic work together to provide immediate stabilization of the patient in preparation for transport to the hospital



**Figure 10**



**Figure 12**



They are also able to do advanced procedures if required such as intubation, needle and surgical cricothyroidotomy, central line placement, saphenous vein cut-down, thoracocentesis, pericardiocentesis, and chest tube placement. The nurse is also able to administer certain medications based on the condition of the patient, such as muscle relaxants (if intubated), sedation, analgesics, nitroglycerin infusion, mannitol, magnesium sulfate, solumedrol, and other medications based on specific protocols developed by the medical director.

Hermann Life Flight has changed over the last twenty one years and will probably continue to do so in the future. In 1997 Hermann Hospital merged with the Memorial Health Care System which is one of the largest in the United States and the largest in Texas. This will probably allow the Flight program to expand to four or five helicopters in the next few years to accommodate the growing population of Houston and the surrounding counties. As technology continues to develop and knowledge in emergency medicine grows, more medical care will be provided to the patient during transport. Direct visual contact with the surgical medical director via cameras worn by the flight nurses may allow life saving procedures to be performed by the flight nurse while en route to the hospital. New medications such as retavase used

in the early treatment of myocardial infarctions and cerebral vascular accidents may be used during transport in order to prevent the permanent damage seen in these patients when treatment is delayed. Rapid transport has changed mortality statistics in the past however more may be required in the

future in order to justify the cost of transport by air. Rapid transport in conjunction with advanced procedures may make the definitive difference between ground transport and air medical ambulances.

### **References**

**Author Information**

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