



"Time Critical - When Should You Fly Your Patient?"

by Larry Wall, Chief Flight Nurse - Superior Air Med I

Imagine this scene; you arrive as part of a mutual aid call. As you arrive, you see a mini-van that has crumpled under a semi trailer. The driver was distracted while turning onto the off-ramp and did not see the stopped trailer. The front third of the car is compacted. You know that it will be awhile before you are able to extricate the driver or the passenger. It appears that the engine has been ripped off the mounts and pushed towards the passenger compartment. This does not look good. The medics on scene want to get access to the patient. The best-trained extrication team is hard at work trying to pry and cut away the wreckage. Your closest level I trauma center is 45 miles away. It is a Friday at 3pm on Labor Day weekend. There is a community hospital 25 miles away. What thoughts do you have now? You have 30-40 minutes of extrication you will have 45 to 90 minutes of transport, depending on traffic. Your EMS system protocols state that extrication of 30 minutes or greater is criteria for a level I trauma center patient. What is your plan now? What are your resources?

If you thought to yourself, "Should we fly this patient to the trauma center?" you are not alone. Every day, firefighters and incident commanders run across this exact scenario. You are faced with a time critical situation where proper planning, training and execution of that plan make all the difference. EMS helicopters provide essential services for patients requiring rapid transport. However, they require vigilance for safety. Familiarity with the basics of landing zone safety is required for all personnel who will be working around the aircraft. Coordinated pre-planning of responsibilities is essential. But where do you begin?

MAKING THE PLAN

The Illinois Association of Air and Critical Care Transport is the state professional association dedicated to "promote and enhance safety, education and communication" with regard to air-medical services within the state of Illinois (www.IAACCT.org). This group has provided a map of air services throughout the state (see page 31). Firefighters in Illinois should be familiar with their nearest EMS helicopter service. All of the programs in the state do outreach presentations with Fire and EMS services on landing zone safety and appropriate use of HEMS resources. The key to success is a coordinated plan with your EMS system and your local EMS helicopter service that includes clear patient criteria, a safety and communication plan and a call list based on the closest available EMS helicopter.

Ideally your EMS helicopter call list should be coordinated with your local EMS agency. Periodic review of your EMS protocol for scene flights should be done with your EMS medical director. Do you have a Quality Improvement Process regarding accident scene flights? Are there existing patient criteria in your current EMS system protocols? Are your EMS helicopter call lists up to date? Are your call lists based on the nearest available helicopter service? Have flight programs moved closer to your fire protection district? By examining the Disaster Map that IAACCT has published, you can contact the EMS helicopters in your area. The outreach and business development departments of these programs will gladly work with you and your fire protection district to establish a well-organized plan of available resources.

First let's examine criteria for flights from the scene of an accident. Here are some likely reasons to fly your patient.

Head injured patients with one of the following:

- Glasgow Coma Scale less than 12 or deteriorating
- Focal neurologic findings
- Penetrating injury or open fracture

Patients with the following chest injuries:

- Possible tension pneumothorax
- Major chest wall injury
- Potential cardiac injury
- Penetrating chest wound
- Patients with unstable vital signs including hypotension, tachypnea, severe respiratory failure
- Burn patients with potential airway involvement
- Patients with spine injuries with neurologic involvement and potential airway/breathing compromise

Exceptions (patients who may require transport but do not meet the above indications):

- Long distance transports of critical patients (more than 2 hours by ground)
- Situations where resources at the sending facility are severely limited:
- Mass casualty situations
- Lack of availability of ground transport
- Lack of availability of critical care personnel to accompany patient
- Weather conditions that ground transport dangerous (e.g. icy roads but clear skies)

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Time Critical

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All flight programs in the state will teach a landing zone safety program if requested. An annual landing zone safety review program should be considered for all fire department and EMS personnel.

Many fire protection districts and EMS systems have multiple hospitals in their region. Most EMS system protocols dictate when there is an immediate airway complication, the trauma patient should go to the closest hospital. However, the closest hospital may not be an appropriate trauma center for that particular patient. In those cases, EMS helicopters provide an essential link to major trauma centers for the outlying hospitals. These flights are very common.

While there are many success stories of patients being flown from the scene of an accident, there are just many success stories of paramedics who followed system protocols and transported to the closest hospital. Many times the EMS helicopter is launched while the community hospital is receiving the critical patient from the field. ■

A Success Story

In June of 2008, Superior Air Med 1 was dispatched to a local hospital for the transport of a 15 month old boy who was found floating face down in a swimming pool. The patient's father pulled his son from the pool and started CPR. The local fire department was dispatched to the scene. The patient was quickly transported to the closest hospital as listed in the protocols. At the time of transport, the patient had a pulse, but was in respiratory failure. The fire department paramedics made significant efforts in route to save this child's life. While at the hospital, the emergency room staff was able to stabilize the patient's airway, but the patient's Glasgow Coma Scale (GCS) remained a 4. For the best possible patient outcome, this patient was transported to a tertiary care center with a pediatric intensive care unit. While Air Med 1 was in route, the emergency department physician was able to collaborate with the pediatric intensivist at the receiving hospital. The patient was intubated, placed on a ventilator and started on hypertonic saline to reduce pulmonary and possible cerebral

edema. This therapy was continued in flight without interruption by the staff of Air Med 1. Ground transport of this patient would have been 40 minutes and would have required a critical care transport ambulance. Flight time was 8 minutes. The Air Med 1 helicopter is set up handle just such a patient. This very sick child was transported safely and rapidly to the specialists at the pediatric intensive care unit (PICU). The staff of the PICU worked tirelessly throughout the night with this young child. 4 days later, this child was discharged home to his family with no neurologic deficits. Without a well-organized protocols, skilled paramedics and fire fighters who followed those protocols and a highly educated flight crew this young child would not have done so well. Collaboration and expertise of the sending and receiving hospital staff created an environment for success. The overall team effort of multiple healthcare providers blessed this family with the chance at a happy ending. It all came down to organization and planning. ■

About the Author:

Larry Wall, RN, BSN, CEN, CFRN, is the Chief Flight Nurse/ Program Manager for Superior Air Med 1 based in West Chicago, IL. Larry has been a transport nurse for 5 years with experience both on helicopters and ambulances. He is a former professional ski patroller and a current volunteer member of the Alpine Valley Ski Patrol.

Landing Zone Setup

Requesting Information

- Name of requesting agency and call back number
- Type and extent of injuries
- Location, major crossstreets, major coordinates, landmarks, etc.
- Ground contact unit and frequency (PL tone if applicable)

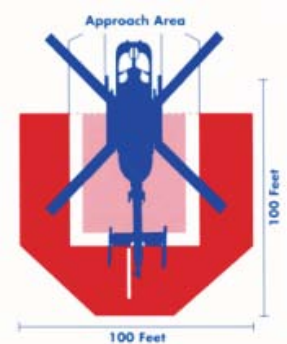
Landing Zone (LZ) Requirement

- 100 x 100 foot area
- Site free of trees, wires, vehicles and loose debris
- Wet down if dusty
- Flat, smooth area, avoid slopes
- Marking devices (flashlights, strobes, flares, LED flashers) secured to ground

- Night: Emergency vehicle with roof top lights on, spotlights aimed down at landing site
- Upwind if hazardous materials are present at scene

Safety Precautions

- Keep vehicles, personnel and bystanders back at least 100 feet
- Always approach aircraft from the front
- Do not approach aircraft unless signaled to do so by a crewmember
- Protect patient from blowing debris and rotor wash
- No loose blankets or clothing on or around patient
- No smoking within 100 feet of the helicopter
- No running within 100 feet of the helicopter
- Do not attempt to open or close aircraft doors



- Do not raise anything above your head (I.V. poles, etc.)
- Follow flight crew's instructions at all times
- Remain clear of tail rotor at all times

*** The above safety and landing zone standards may vary from region and/or aircraft type. Please note that these are basic safety and LZ standards only***