Life Flight Network

Helicopter Safety & Landing Zone (LZ) Training
Training Categories

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Life Flight Network

• Started in 1978 as Emanuel Life Flight in Portland, Oregon

• 4th hospital-based air ambulance in the US and the first program of its kind on the west coast.
Life Flight Network

- LFN has safely transported over 100,000 patients since 1978
- *Oregon Business* Magazine Top 100 Nonprofits to Work for in Oregon Awards (*Large Organization*):
  - 2014: #4
  - 2013: #2
  - 2012: #1
  - 2010 & 2011: Top 15 rankings
- 2009 recipient of the AAMS Air Medical Transport Program of the Year award
- CAMTS accredited since 2006
- Obtained own Part 135 Certificate in 2014
Life Flight Network is a not-for-profit medical transport program owned by four Pacific Northwest and Intermountain West hospitals.
Flight RN and Paramedic

• Life Flight Network requires 5 years of critical care experience
  – The flight nurse/paramedic team merges the expertise and knowledge of hospital critical care with the pre-hospital transport environment

• Certifications:
  – BLS, ACLS, PHTLS or BTLS, PALS or PEPP, and NRP
  – Specialty certification: CFRN, FP-C

• Ability to perform invasive skills (chest tube, needle and surgical cricothyrotomy)

• Able to care for any patient at any age
Helicopter Pilots

• Minimum of 2,500 flight hours with an average of 5,000 rotor-wing flight hours

• Pilots receive specialized training
  – Certified in aircraft type
  – Specially trained for off-airport landing zones
  – NVG certified
  – Trained for mountain flying
Aircraft Information
Current Aircraft

AgustaWestland 119Kx
Agusta 119 Kx “Koala”
Agusta 119Kx
Garmin G1000 Cockpit
AW119Kx

- Ability to transport a two-person critical care team and two patients with full-body access
- Speeds up to 160 miles per hour
- A state-of-the-art Garmin G1000H avionics package with synthetic vision, enhancing safety, and situational awareness
- Night vision goggles, satellite weather and tracking, and Helicopter Terrain Avoidance System (HTAWS)
- Appareo video and data cockpit recording system
- A fully-equipped emergency medical cabin, including a LTV 1200 ventilator, blood products, Zoll Propaq MD cardiac monitor and a C-MAC PM video laryngoscope
Current Aircraft

Agusta Westland 109E “Power”
AW109 E “Power”

- Twin engine
- High-tech avionics package
- Night vision goggles
- Satellite Tracking
- 175 mph maximum cruise speed
- Capable of carrying two patients
- A fully-equipped emergency medical cabin, including a LTV 1200 ventilator, blood products, Zoll Propaq MD cardiac monitor and a C-MAC PM video laryngoscope
Current Aircraft

H135
Operated by Metro Aviation, the 135 twin-engine helicopters are popular aircraft in the air medical industry. Similar to the Agusta aircraft, the H135 is capable of transporting two patients or a specialty team. The rear patient care compartment is separate from the pilot area. The H135 has an enclosed tail rotor.
Indications for Air Transport
Why Helicopter Transport?

• Reduces “out of hospital” time for critically ill or injured patients

• Provides necessary specialized medical expertise or equipment to patients before and/or during transport

• Provides critical care transport to patients inaccessible by other means of transport

*A joint position statement from: AMPA, ACEP, NAEMSP, AAEM*
Indications for Air Transport

TRAUMA

• Head and/or spine injuries
• Significant penetrating injury above mid-thigh, in torso, or head
• Chest injuries
• Unstable vital signs
• Burns >10% BSA or major burns
• Major electrical/chemical burns
• Amputation or near-amputation
• 2 or more long bone fractures or major pelvic fracture
• Scalping or de-gloving injury
• Significant mechanism of injury

NON-TRAUMA

• Any patient airway that cannot be maintained
• Cardiac disease with progressive deterioration
• STEMI patients
• Severe or acute neurological illness
• Toxic exposure or electrolyte disturbances
• Unstable vascular emergency
• High-risk obstetric patients
• Critically ill pediatric/neonatal patients
• Transplant patients
• SICK patient
When Minutes Matter

• Time-sensitive clinical conditions

• Short time to definitive care results in
  – Improved survival
  – Lower morbidity

• Examples:
  – Acute ST-segment elevation MI
  – Acute ischemic CVA
  – Major, multi-system trauma
Significant Mechanism of Injury

- MVA
  - Significant structural intrusion
  - Speed of vehicle >55mph
  - Extrication time >15 minutes
  - Ejection or associated fatalities
- Motorcycle victim ejected >20mph
- Pedestrian struck and thrown >15 feet
- Fall (>= 20 feet)
- Crushing injuries
- Near drowning injuries
- Trauma patient <12 or >55 years old.

*Position Statement from AAMS*
Trauma Accident Scene
Other Considerations for Air Transport

- Long distance transports > 2 hours for patients who require critical care management
- Remote locations with isolated injury
  - Logging accident with painful injury
- Situations with limited resources due to:
  - Mass casualty
  - Lack of ground ALS transport resources
  - Limited or absent critical care
- Road conditions
  - Icy roads, flooding, bridge issues, heavy traffic, remote unimproved roads, etc.
Activating the Helicopter
Who Can Request Air Medical Services?

- Law Enforcement
- SAR Agencies
- Fire Departments
- First Responders
- Ambulance Services
- Physicians or Nurses
Direct Activate or Standby?

• Early activation of closest air resource is encouraged

• Standby status:
  – Mobilizes the flight team to the helicopter & pilot starts to check weather.
  – Does not launch the helicopter.
  – Does not reserve the helicopter.

• Life Flight Network can be canceled at any time

• If canceled, there is no charge to patient or requesting agency up to the time flight crew delivers critical care to the patient
Trauma Accident Scene
Weather Check

• The pilot will obtain current and forecasted conditions for the area before making the decision whether it is safe and legal to fly.

• If it is determined we are unable to fly to the scene due to weather, options to rendezvous will be evaluated.

• If weather is bad at the SCENE, please don’t “weather shop” if turned down by the first service.
Selection of Landing Zone
Landing Zone Criteria

• **(S)** Size, Slope & Surface
  – Size: Landing Zone: 100’ x 100’
    • Smaller size will be considered by the pilot
  – Slope: Less than 6 degrees
  – Surface: Wet down loose dirt if possible

• **(L)** Landing Area:
  – Mark with cones during day
  – Strobes, flares at night

• **(O)** Obstacles: Poles, Wires, Trees, Towers etc.

• **(W)** Winds: current wind direction

The pilot has the final say on the selection of the LZ.
Choosing a Landing Zone (LZ)

- Try to select an LZ adjacent to the scene to avoid the need for ground transport that could prolong a patient’s pre-hospital time.
- Select an LZ that will allow for an angled approach from at least one direction. The approach and departure path should be clear of towers, poles, wires, trees, signs, and other obstructions.
Landing Zone Safety & Security
Responsibility of the Landing Zone Officer (LZO) includes the following roles:

- Site selection
- Site preparation
- Site protection
- Site control
- Air to ground radio communication
- Assign a tail rotor guard
- Fire protection
- Identify & communicate hazards to pilot
- Communicate if more than one air resource is requested
If time allows, walk the LZ to look for hidden debris that may fly up in rotor wash and look up for hazards.
What is wrong with this picture?
Tail Rotor Guard Responsibilities

- The tail rotor guard will assume a position at least 50 feet outside the rotor disk.

- Stop people, animals, vehicles, ATV’s and snowmobiles from approaching the tail of the aircraft.

- Remain in position to maintain eye contact with the pilot if possible.

Tail Rotor – *The safety issue even experienced people forget.*
Always Avoid the Tail Rotor!
Landing Zone Preparation

Consider laying the cones down with a flashlight placed inside them for night operations.

Cones should be placed at the Perimeter of the LZ

Pilot may request to turn off strobes
Security and Crowd Control

• Pedestrians
• Vehicles
• Snowmobiles/ATV’s
• Animals
Landing Zone Hazards
Landing Zone Hazards

• POWERLINES
• Trees, poles, cell tower, wind turbines
• Loose material
  – Trash cans, tarps, hats, building materials
• Uneven terrain
• Loose dirt, gravel or unpacked snow
• High grass
Power lines

Obvious from below. Not so obvious above.
Blade clearance may be deceptive (always approach and leave on the down slope side to avoid main rotor)
Debris

- Debris can blow up and circle through the rotor system or blow towards ground personnel
- Wear eye protection
- Close all doors & windows
- Secure all loose objects
- Remove ball caps
- Protect yourself and the patient
Hazardous Materials

• Flight crew will request to identify hazardous materials either by name or chemical number

• Flight crew may reference Poison Control Center or DOT Hazardous Material guidebook for further details

• Hazmat scenes need to be deemed safe by LZ ground contact

• Flight crew will remain in the COLD or SAFE zone

• LZ should be an alternate site upwind and away from the actual hazmat scene.
Transport of Hazmat Patient

• All clothing must be removed prior to decontamination and transport
• Contaminated patients will not be transported by air
• Ground transport may be considered after consultation with Poison Control or OLMC
Communications with the Aircraft
Communication with the Helicopter

Identify Your Position

- NOSE OF THE AIRCRAFT is always 12:00 o’clock
- When directing the helicopter, describe your location based on the aircraft clock.
  - **Correct:** LF 12, I am at your 2:00 position
  - **Incorrect:** LF 12, you are at my 2:00 position
Communication with the Helicopter

• Strive for direct, clear and concise radio communication – relayed information **ALWAYS** loses something in translation!

• Hand signals aren’t generally recommended – there are too many “languages”

• Advise the flight crew when you have the aircraft in sight

• Landing zone instructions and hazard information can start to be shared once radio communication has been established and finalized when the pilot has you in sight

• Maintain radio silence during final approach, but **DO NOT** hesitate to use **“ABORT”** if needed
Final Approach

• The LZ officer should move to a safe vantage point to watch for hazards

• Reserve radio traffic for safety-related communication only. If immediate hazard is seen say, “Abort landing!”
Night-time Landings

• Turn off flashing white lights for helicopter approach
• Pilot may request other lights off
• Use spotlights to mark obstacles and poles with overhead wires
• Don’t shine lights directly at the helicopter
Night Vision Goggles (NVG)
NVG *ENHANCES* safety at night by multiplying available light up to 10,000 times, allowing for improved ability to see in no or low light conditions.
Night Vision Goggles (NVG)

What they **DON’T** do:

- Allow us to fly in fog, freezing rain or heavy snow
- Change our current weather minimums
General Helicopter Safety

- BEWARE of tail rotor/NEVER step behind the aircraft

- NEVER approach the helicopter unless signaled by the medical crew

- Be situationally aware – pay attention!
Loading the Patient
Arriving on Scene

- After landing the flight crew will exit and come to you
- NEVER approach the helicopter when the rotor blades are turning unless accompanied by flight crew
Loading the Patient

Flight crew will direct the loading process. Your assistance will be requested and appreciated.
Safety in Loading Patients

- It is important to follow the instructions of the crew at all times.

- **DO NOT** lift anything higher than your head.

- Secure any loose blankets, IV’s or equipment.

- **DO NOT** wear hats or have loose items near the helicopter.

- Exit as a group in the same direction you approached the aircraft.

- Remove patient from Stokes Baskets.
Departure of the Helicopter

• In an unforeseen emergency, LFN will usually return to the LZ
  – Maintain integrity of the LZ for several minutes after departure
  – Stay on air to ground radio frequency several minutes after departure
Disaster Response
Disaster Response

During a mass casualty incident, LFN will:

• Activate requested number of aircraft to respond as available
• Notify administrator on call of MCI
• Follow local emergency management procedures for disaster response
• Communicate with dispatch, LZ officer, and incident command as per usual operating procedures
Emergency Landing Procedures
Emergency Landing Procedure

In case of a helicopter emergency landing – keep safe!

- *If at a hospital follow the Emergency Response Plan*
- Protect yourself and others from flying debris
- Do NOT approach the aircraft until all moving parts have come to a stop
- Advise your 911 dispatch to contact Life Flight Network Communications Center
- Call for additional assistance as needed
  - Fire Unit(s)
  - Medical Aid Unit(s)
  - Air Ambulance Resources
Emergency Engine and Fuel Shut Down
AW119Kx Throttle Engine Shut Down

Slide collar to rear
Rotate throttle counter clockwise
• These switches are on the center console.
• Push and turn to OFF. This will secure the engines.
• These switches are on the center console fuel panel.

• Move switches to OFF. This will secure fuel to the engines.
AW 109 & 119 Rotor Brake: Steps To Stop Rotor

109 Rotor Brake

119 Rotor Brake
Oxygen Shut Off

AW 119 Oxygen/LOX shut off

AW 109 Oxygen / LOX shut off
Emergency Evacuation

- Front doors
- Rear cabin doors
AW 109 & 119 Emergency Response

Fight fire here

Emergency locator transmitter

Fuel tank

Battery
Operations of the Heliport
Heliport and hospital pads are very similar to scene LZs.

Most heliports and hospital pads have an Emergency Response Plan

• Who should be notified per the ERP?
• OPEN and go over the heliport emergency response plan (ERP) now.

Communication systems

• What type of Communication systems does the ERP outline?
• LFN Communications UHF, VHF, 800, land line
Operations of the Heliport

Fire Protection System
• Fire protection system / Portable fire extinguisher
• What fire protection is available on the heliport or other local agency
• Know how to use the fire protection system

Egress points from the helipad
Proper signs...no smoking, access/egress points, etc.
Safety is a Team Effort!

Thank you for making LZ safety a top priority.