Training Overview

- Specifics of the aircraft
- When to call for transport
- Launch information
- Safe landing zones
- Weather considerations
- Ground safety
- Loading aircraft
- Hard landing protocol

Includes Required Content for Landing Zone Officer Training
Endorsed by the Idaho Air Medical Safety Committee

About Northwest MedStar

- Established in 1994
  - Merge of two competing flight programs
- A Division of Inland Northwest Health Services (INHS)
  - A non-profit 501(c) 3 corporation
- Accredited by CAMTS
  - Meets or exceeds national standards for safety and quality care

Northwest MedStar Bases

- Spokane Felts Field Airport
- Tri-Cities
- Pullman/Moscow
- Moses Lake

Know Who Serves Your Region

Eurocopter EC-135

- Equipped with twin Pratt and Whitney turbine engines
- Average cruise speed of 135 mph
Eurocopter EC-135

- Rotor diameter 34 feet
- Rotor height of 10 feet
- Aircraft length 39 feet

EC-135 Passengers

- Three crew members
  - Pilot
  - Registered Nurse (RN)/Paramedic
  - Registered Respiratory Therapist (RRT)/EMT
- One patient
  - Two patients possible in a multi-casualty incident (MCI) with prior notification
  - Family members discouraged, but may be possible in certain circumstances
    - At Pilot and crew discretion

EC-135 Interior

A-Star

Length 42 ft including blades

Side loading

BO-105

Augusta A109
Goals of Air Medical Transport

- Decrease transport time to definitive care
- Provide critical care capabilities
  - On-scene
  - During transport
- Provide integrated support in multiple casualty incidents (MCI)

Guidelines for air transport

- Total ground time to the hospital is > 30 minutes (or time savings of ≥15 minutes can be achieved)
- The patient meets one or more of the transport criteria

Patient Condition

- Adult patient with any one of the following:
  - Systolic blood pressure < 90
  - Respiratory distress with a rate < 10 or > 29 (<20 in infant < one year)
  - Glasgow Coma Scale < 13, indicating a head injury

Anatomy of an Injury

- All penetrating injuries to head, neck, torso
- Flail chest
- Two or more proximal long-bone fractures
- Crushed, degloved, or mangled extremity
- Amputation proximal to wrist and ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

Mechanism of Injury

- High Risk Auto Crash
  - Intrusion > 12 in occupant site; > 18 in any site
  - Ejection (partial or complete) from auto
  - Death in same passenger
  - Compartment
  - Vehicle telemetry data consistent with high risk of injury

Mechanism of Injury

- Falls
  - Higher than 20 feet (adult) or more than 10 feet or 2-3 times the height of the patient (pediatric)
- Auto vs. pedestrian/bicyclist thrown, run over or with significant (>20 mph) impact
- Motorcycle/ATV crash >20 mph
Special patient or system considerations

- Age extremes
- Anticoagulation and bleeding disorders
- Burns
- Time Sensitive Extremity Injury
- Pregnancy > 20 Weeks

EMS provider judgment

Medical Conditions for Air Transport

- Airway problems with possible obstruction
- Respiratory distress
- Chest pain with possible heart attack
- Unstable cardiac arrhythmias
- Altered level of consciousness (stroke)
- Imminent birth of preterm infant

Use of Stand-By

- Place NW MedStar on stand-by if may be needed but not yet confirmed
  - Decreases launch time
  - Can cancel without cost
  - Dedicated until launched or canceled
  - If flight time is long, immediate launch is encouraged

Launch Information

- Give patient information
  - Type of injury or medical problem
  - Number of patients
  - Approx Wt
  - Age(s) of patient(s)
    - Pediatric team sent if under age 8

Launch Information

- Location of the scene
  - GPS coordinates (latitude and longitude)
  - Cross streets
- Identifiable landmarks

Launch Information

- Local weather conditions
- Radio frequency (including PL tones)
- Ground contact information
- Indication of hazardous materials
Setting up a safe landing zone

Choosing a Safe Landing Zone

- 75 ft. by 75 ft. minimum in daylight
- 100 ft. by 100 ft. minimum at night
- Clear of wires, obstacles, and debris
- Flat, smooth surface
- Slope of less than six degrees

Gentle Slope Acceptable

Ideal Landing Zone

- Offers plenty of landing space
- Good approach and takeoff path

Setting up the Landing Zone

- Helicopters develop maximum lift when in forward flight
- Pilots like to take advantage of the winds for lift when safe to do so
- Designate a LZ officer
  - Marks the LZ
  - Secures the LZ
  - Communicates directly with the helicopter pilot
- Walk the landing zone to look for hidden debris that may fly up in rotor wash
Mark the Landing Zone

- Orange cones
- Strobes
- Use flares with caution

Weighted strobes specifically made for marking helicopter LZ are preferred

Marking The LZ

Night Landing Zones

- Use overhead emergency lights
- Shine dim vehicle headlights into LZ
- Turn off flashing strobes for approach
  - Pilot will likely request other lights off
- Use spotlights to mark obstacles and poles with overhead wires
- Don’t shine lights directly at helicopter

Night Vision Goggles (NVGs)

Farm House on Dark Night
Same Farm House With NVG'S

Night Vision Goggles (NVGs)

- What NVGs Do:
  - Amplify available light 6,000 times
  - Allow crew to better see terrain and hazards

- What NVGs Don’t Do:
  - Do not allow flight in fog, freezing rain or heavy snow

Night Vision Goggles Landing Zone for NVG Flights

- Light up LZ as usual
- Pilot will likely ask you to turn off lights for final approach
- Continue to light up wires and identify their location to pilot
  - Do not shine any lights directly at the helicopter

Getting the Attention of the Aircraft Crew

- Combination of light and movement attract attention
- To get the attention of an aircraft when in backcountry with no vehicles use:
  - Flashlight
  - Flint and steel striker (fire starter)
  - Flash from camera

Lost Hikers
Weather Considerations

- Helicopters fly VFR—cannot fly in:
  - Poor visibility/Fog
  - Freezing precipitation
  - Hail
  - Lightning

- Always rely on the pilot’s professional judgment
- If weather is bad at the scene, don’t “weather shop” if turned down by first service

Directing the Helicopter into the Scene

Identify Your Position

- The pilot will circle the landing zone
- Let them know where you are relative to their position
- Identify your position using a clock position from the pilot’s perspective
  - Think of the nose of the helicopter at 12 o’clock

How Would You State Your Position?

“MedStar, I’m at your 5 o’clock. You need to turn right.”
How Would You State Your Position?

“MedStar, I’m at your 8 o’clock. You need to turn left.”

Landing Zone Information

• Identify wind direction and estimate its speed
• Identify the location of any wires in the area including:
  – Power or phone lines that are 20 to 40 feet high
  – High tension lines that are up to 150 feet
  – If possible, park a vehicle under the lines

Identify Overhead Wires

• These lines may be easy to see from the ground but they are difficult to see from the air

The Final Approach

• Radio traffic is reserved for flight safety information only
• Don’t hesitate to speak up about possible hazards

Ground Safety

• Don’t approach the helicopter if the rotor blades are turning
  – Noise interferes with communication
• Rotor wash > 70 mph
  – Blowing dust, gravel, snow…
  – Protect yourself and patient
  – Keep pt. in ambulance

Brown Out

Let flight crew come to you & the patient
Ground Safety
- Maintain crowd and traffic control while helicopter is on-scene
- Keep landing zone free of debris

Rotor Safety
- The EC 135 main rotor is 10 ft above ground
  - Will flex in high winds
- Never drive ambulance under main rotor blades, even if they're not moving.

Landing Zones in Difficult Terrain
- The danger area at this sloped LZ is in front of the helicopter
- Approach the helicopter from the sides after the rotors have stopped moving
- Keep eye contact with the pilot

Tail Rotor Safety
- The tail rotor can be the most dangerous part of the helicopter
- Assign tail rotor guards at 3 and 9 o’clock so they can both see the pilot
- Keep bystanders and vehicles away

Identify the Hazards at this Scene
- Trees
- Debris
- Blowing dust
Identify the Hazards at this Scene

Prohibited Items
- Any item that cannot go on a commercial aircraft
  - Firearms
  - Devices that can be used as weapons
  - Hazardous materials
  - Chemical protection sprays

“Hot” Loading
- Safety is our #1 priority
- Cold loading is standard
- EC 135 has short shut-down and start-up times
- Communication difficult under running helicopter
- Hot loading can be done if circumstances warrant

Loading Helicopter Patient
- MedStar crew are responsible for loading patient
- You may be asked to assist
- Follow flight crew directions
- Ask about any directions you do not understand

Loading Helicopter Patient
- Let MedStar crew open & close doors
- Patient loaded head first, into the rear of helicopter
- After patient is loaded, move away from helicopter

EC 135 Clam Shell Doors
- Doors & hinges are lightweight & fragile
Continued LZ Protection

• After the aircraft is closed up and starting:
  – Look for open doors or straps hanging out
  – Keep a radio in hand to advise pilot of any hazards that appear

If Aircraft Has a Problem

The two areas of flight operations with the highest risk are the take-off and landing phases (especially in unimproved LZs)

Hard Landing Protocol

• If a hard landing occurs:
  – Notify Northwest MedStar through your dispatch
  – Keep yourself safe! Don’t approach the aircraft until the rotors stop
  – When the rotors stop and the engine is off, assist the crew in evacuation
  – If the doors won’t open, use the emergency access

Hard Landings

• If there is a high danger of fire and the engines are still running, spray foam or water in the engine air intake ducts

Avoid the O2 & fuel tanks near the bottom

• Cut the helicopter apart if necessary
  – Cut or break through the plexiglass windscreen or its structural supports
Emergency Access

- Locate center slider doors on both sides of the helicopter and try the latch
- Pull up on the red latch at the top of the door window and remove the seal and window

Fuel and Battery Shutoff

- If the crew is unresponsive
  - Find the fuel switch and battery cut-off
  - These are usually marked in red or yellow
  - Lift the covers and turn off-fuel first then battery

Test Questions

1. Air transport is recommended which of the following conditions if ground time is >30 minutes and significant time savings can be achieved by air?
   A. Airway problems with possible obstruction
   B. Respiratory distress
   C. Chest pain with possible heart attack
   D. Unstable cardiac arrhythmias
   E. Altered level of consciousness (stroke)
   F. All of the above

2. Minimum size of a landing zone at night should be at least:
   A. 50' x 50'
   B. 75' x 75'
   C. 100' x 100'
   D. 150' x 150'

3. Lights shined directly at the helicopter during night landings:
   A. Should be avoided
   B. Don’t bother the pilot
   C. Help the pilot to see the landing zone better
   D. Should only be red in color

4. To light up a remote landing zone at night:
   A. Always use high-beam headlights on vehicles
   B. Use low-beam headlights on vehicles and be prepared to turn them off at pilot request
   C. Use bright white flashing strobe lights
   D. Never light up the landing zone if the pilot is using NVGs

5. Once the helicopter lands at the scene:
   A. The medical crew will take over traffic control
   B. The pilot will take over traffic control
   C. Nobody needs to watch it any more
   D. At least one safety officer needs to maintain LZ security

Questions?

This LZ Safety class is also available on-line at www.nwmedstar.org

MedStar Alert

A Smart Phone App Developed for EMS
Questions?

Contact: Carolyn Stovall
509-242-4264
1-866-630-4033
stovalc@inhs.org
Fax: 509-232-8344

Special thanks to
Sheila Crow
Stitchin’ Dreams Embroidery
wcscrow@yahoo.com

For providing our Secret Question prize

Updates Please

If the name and address of your agency contact has changed, please let us know. This is where we mail your certificates.

Email updated name, address and email to:

Jackie Williams – williajd@inhs.org
The Inland Northwest Health Services now offers Online American Heart Association courses! To register for our online courses please visit www.healthtraining.inhs.org and click on “Course Registration”. For information call (509) 242-4264.

- **Healthcare Provider** $60
- **PALS Course** $210 – ECC Handbook separate, $30
- **ACLS Course** $210 – ECC Handbook separate, $30
- **ACLS Course with HCP** $250
- **Heartsaver First Aid CPR & AED** $55
- **Bloodborne Pathogens** $18

**All prices include a skills check**